

No. 2159

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United States
Circuit Court of Appeals
For the Ninth Circuit.

Transcript of Record.
(IN TWO VOLUMES.)

LOS ANGELES GAS AND ELECTRIC CORPORATION,
a Corporation,

Plaintiff in Error,

vs.

THE WESTERN GAS CONSTRUCTION COMPANY,
a Corporation,

Defendant in Error.

VOLUME II.

(Pages 417 to 873 Inclusive.)

Upon Writ of Error to the United States District Court of the
Southern District of California,
Southern Division.

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(Testimony of B. S. Pederson.)

Q. In the use of California oils is there any residuum or deposit on the carbureter bricks that makes that imperative?

A. There is. The California oils contain a great quantity of asphaltum which is not gasified, and while a good portion of it passes down through the bricks and will probably burn up during the blast, there is a resulting deposit there which compels us to clean out at certain periods.

Q. How often?

A. That would vary with conditions again. If generator conditions were ideal, such as we find with anthracite coal or coke, and no accession of dust blown over that you cannot take care of in the chamber, it would run quite some time, it might run two or three weeks or four weeks. It is a [399] difficult matter to say. But where the conditions are adverse it would take a much shorter time. That is something that has to be determined solely on local conditions.

Q. (By the COURT.) What might be those adverse conditions?

A. This California oil in the carbureter and then the use of carbon fuel that is so disintegrated and that forms so much dust that a great mass blows over, and that mixes with the oil that is sprayed in there and forms a coat of solid carbon there.

Q. And that necessitates cleaning?

A. That necessitates cleaning. As the conditions were here, you would have to clean at least once a week by forced draft.

(Testimony of B. S. Pederson.)

Q. (By Mr. CHAPMAN.) Do you know what the practice is in the operation of water-gas sets in this southern country?

A. The only one that I know of of any size in operation in this country is the one in operation at the Aliso street works of the Los Angeles Gas and Electric Corporation. They take one day a week to clean out their machine.

Q. How do they clean it out?

A. By forced blast. Sometimes by forced blast and sometimes by natural blast. I am not positive whether they use one all the time or not. That is the usual custom.

Q. You mean they let it lie idle during the day and let it burn out? A. Yes, sir.

Q. And that removes the carbon from the checker-brick? A. Yes, sir.

Q. During this test did you follow that practice of taking a day each week? A. I did not.

Q. Prior to the time this test was undertaken, did you have any conversation with Mr. Luckenbach about the matter of laying [400] off a day a week?

A. I did.

Q. Who was present and where did it take place?

A. Mr. Millard was present and it took place in Mr. Luckenbach's office.

Q. About what time?

A. I cannot state the date. It was some time previous or prior to the test, but it was before—if my recollection serves me—it was before I went north the last time. I was here off and on so often that the

(Testimony of B. S. Pederson.)

periods have not stayed in my mind. There was one time there previous to the test.

Q. State what was said.

A. I brought up the subject of having a day off each week to clean out—it was some time before the test. I should judge some time within a month or two before the test. I brought the subject up. I had already talked with Mr. Millard down at the works about the matter.

Q. First tell us who Mr. Millard is.

A. As I explained yesterday, he was the superintendent of the gas works at that time. We went together up to Mr. Luckenbach's office and took up that question, and we didn't seem to know just what to do about it at that time, and we asked Mr. Millard if it was the custom at the works to shut down all the different machines one day each week, and Mr. Millard said it was. He said, "That is a very good point, and it seems reasonable. We will think that over," I didn't get any definite statement from him that we could have that day a week.

Q. After that interview did you have the subject up with Mr. Luckenbach or Mr. Millard or other officials of the Gas Company? A. Later?

Q. Yes. A. Personally, I think not. [401]

Q. After the contract was made on July 12, 1909, did you conduct a preliminary experiment prior to changing the apparatus provided for in the contract?

A. I did.

Q. That was along about what time?

A. In August, I think.

(Testimony of B. S. Pederson.)

Q. And soon after the contract?

A. Soon after the contract.

Q. And after you made those preliminary experiments what did you do?

A. I submitted my report to the home office and my calculations in the matter, and I received authority to make a contract for the fulfillment of that contract by a local concern.

Q. And after you received that authority what did you do?

A. I made a contract with the Western Boiler Works to proceed with the work, and made arrangements to go ahead with that work.

Q. And did the work start and proceed?

A. Just as quick as it was possible to get the blue-prints out and get the material and the work in shape.

Q. (By the COURT.) When was the work commenced?

A. I think within two or three weeks of the time that we decided what to do. We had some work to do first to decide our line of action.

Q. Two or three weeks after you heard from your report to the home office?

A. Yes. We naturally negotiated with two or three concerns to get a contract at the proper price.

Q. How long after July 12, 1909, before you began making these experiments?

A. I think it was the latter part of the month. Within a week or two. [402]

Q. Wherein did the new generator differ from the old?

(Testimony of B. S. Pederson.)

A. It was enlarged. It had two charging doors and a division wall.

Q. While this work was in progress and before it was completed, did you have sole and exclusive charge of it or did someone else come on the ground?

A. Mr. White came on the ground and took charge of the work while it was in progress.

Q. What time did he arrive?

A. I think it was in the fall, sometime along in October or November; I am not exact as to the date.

Q. Do you know whether he was here constantly every day? A. He was from that time on.

Q. Engaged in putting this machine in shape?

A. Engaged in supervising the work. The Western Boiler Works had the contract, and Mr. White superintended the work. It was done under his supervision.

Q. After Mr. White arrived when was the first time that you came on the scene?

A. In the latter part of December. I was here for a day or two.

Q. Was it completed at that time?

A. I won't say positively whether it was or not. If it was not, it was very close to it. I won't positively swear to it.

Q. Did you have any talk with any member of the gas company people at or about the time you wrote that letter, with respect to the occasion for writing it or the purpose or reason for it?

A. I had talks with the gas company people numerous times with reference to this same subject of

(Testimony of B. S. Pederson.)

moist fuel, and I always maintained that we would not use or should not use that [403] moist fuel. The contract called for a fuel prepared in a certain way, and I always maintained and do now that that is the fuel that we contemplated using, and that we should use. And while I was advised by different members of the gas company to the effect that it would do better with that fuel, which contained a great deal of moisture, Mr. White and I had a discussion on the same subject. He told me he was of that same opinion at that time.

Q. What did you understand to be the brick the gas company had furnished or provided for this test? Did you understand that they had bricks that they could furnish with less than 10 per cent moisture?

A. I did.

Q. And that they were in a position to furnish you there? A. I understood so.

Q. And you knew at the time you wrote that letter that they were going to fire-dry the brick or kiln-dry it? A. I did not.

Q. Did you know whether or not they had in operation a drying apparatus there?

A. At that time they had a Cummer drier going.

Q. At the time the original contract was made did you have any conversation with Mr. Luckenbach about the installation of a drier? A. I did.

Q. What was said on that subject?

A. The conversation in Mr. Luckenbach's office was in reference to fuel generally, and in this instance as to the manner in which they were going to

(Testimony of B. S. Pederson.)

prepare the fuel for us. He asked me my opinion as to the Cummer drier, and I told him I considered it a very good apparatus, and I had no doubt that anything Mr. Cummer told him that they could accomplish, they [404] would be able to accomplish. He said they were contemplating the installation of a Cummer drier of the capacity of 60 tons a day, which he said would be ample to take care of our generators. They intended at that time to install this for the purpose of drying this lamp-black down to between five and ten per cent moisture, and then brick it for our use.

Q. Do you know whether they did use that apparatus to any extent?

A. I think they did to a certain extent. How much, I don't know. It was tried out and they found at one time that it did not have the capacity they claimed for it, or there was a misunderstanding of some kind.

Q. Did they have the apparatus installed when you wrote the letter in December?

A. Yes, they had the apparatus installed at that time.

Q. Now, how long after the letter was written did you first operate the machine and make gas on the machine? A. This was in 1910, that you refer to?

Q. Yes.

A. That exact date I do not remember. I think it was in the latter part of January, some time.

Q. And how long did you operate the machine?

A. I operated the machine until the explosion oc-

(Testimony of B. S. Pederson.)

curred, I think it was January 23d, or 24th?

Q. The 26th?

A. No, there was one besides that. There was one a day or two earlier than that, and we stopped operations at that time.

Q. For what purposes were the operations carried on?

A. To determine our line of operations when we could make a final test. It is necessary in any gas apparatus to have determined what proportion, for example, of oil and fuel you are to use, and steam and air, in order to have a balanced [405] perfect machine under ideal conditions.

Q. Did you complete your experiments at that time? A. I did not.

Q. What interrupted them? A. The explosion.

Q. What was that explosion.

A. It was an explosion in the gas company's main air line from the air pump or blower, as we call them, to the different apparatus at the works, including ours. The explosion occurred out in the yard and tore the pipe apart. In our immediate building where I worked and where their air line is also located leading to our machine, the explosion had an effect of drawing the pipe in, as though there had been a vacuum out on the line somewhere, and sucked the pipe until it collapsed.

Q. It was no part of your apparatus?

A. No, sir; no damage to our apparatus at that time.

Q. After that incident or interruption of the ex-

(Testimony of B. S. Pederson.)

periment, did you remain here? A. No.

Q. When did you next come on the ground, and what was the occasion of it?

A. I don't remember whether I was here between that time and the final test or not. I left here and made a trip north—I am not able to state just now without having something to refresh my mind whether I was here or not. I was making so many trips in and out, that I am unable to say exactly.

Q. By whom were you summoned or notified to attend the last test.

A. I got here on the summons of Mr. White.

Q. Were you delayed in transit?

A. I was up in Washington and Oregon at that time. [406] There was some floods that delayed me there, and I think I wired that I was delayed. I may have wired to Fort Wayne or to White, and I don't remember which. But, at any rate, I was delayed there. And in getting to San Francisco, I was further delayed there because the coast line was out of commission and the valley line was also tied up. I think I was delayed in San Francisco two days—one day delayed and the other day I couldn't get accommodations to get down here.

Q. And when you did arrive had the test started?

A. Yes, sir.

Q. What day did you arrive?

A. I think it was the 12th.

Q. What was the condition of the fuel that was being furnished at the time you arrived?

A. At the time I arrived the fuel was in what I con-

(Testimony of B. S. Pederson.)

sidered a rather poor condition, in the fact that it was creating a great deal of dust and crumbling with very slight handling.

Q. And you took charge of the night shift?

A. I did.

Q. What hour did you get to work?

A. I think on my arrival. I think I went to work right away and worked right through till next morning.

Q. What were the usual hours?

A. From six o'clock in the evening till six in the morning.

Q. Do you know whether the bricks sent you at that time were kiln-dried or not?

A. Yes, I think I did know that. That is, I was not informed about that to that effect, but I could see them kiln-drying them, and the natural presumption would be that they were those bricks, and I knew they were furnishing those bricks.

Q. What were the appearances? Were they a hard looking [407] substantial brick, or otherwise?

A. You could see fissures in them at all points, particularly longitudinally. These fissures were so wide and open that it would be a matter of very little difficulty in tearing the bricks apart.

Q. But were the bricks capable of such handling as was necessary to put them in the fire?

A. They were not, and remain in anything like—

Q. Describe the charging apparatus with respect to its feasibility for handling the fuel?

(Testimony of B. S. Pederson.)

A. I considered that charging apparatus to be rather a convenient affair if the fuel was of the proper consistency. The wagon would drive up with this fuel over a pit—straddling the pit—and the driver would take off the sides and take off the scantling bed, and the bricks would drop down in a mass, one on top of the other, a drop possibly four or five feet. Then from there it would pass into what would be called a skip. By the raising of a door at the bottom part of this container; the drop there was not very severe. It was just a matter of two or three feet. Then it was hoisted to the top of the building, and the skip or bucket was tipped over and the bricks allowed to shoot down into the upper bin and collect there ready to be discharged into the generator through another spout which was also built on an incline, and afforded a slide to the generator.

Q. Have you handled these lamp-black bricks in various forms to any extent in your experience?

A. During my experience here I have handled a good many of them.

Q. Have you ever seen material dried first and then bricked? A. To ten per cent?

Q. Yes. [408]

A. I have seen them to this extent: That I made brick myself on a little hand-press with lamp-black containing 4 per cent moisture, and made a fairly substantial brick, although not of the thickness of the bricks used here. That was because of the apparatus that I had to experiment with. It was just one of these little hand-presses that they have in a brick-

(Testimony of B. S. Pederson.)

yard. But the brick I considered was fairly substantial. With a power-press I would say there was no difficulty at all to make a brick with a less percentage of moisture. My observation and what I have learned from other sources, confirms me in that statement, and my general knowledge of the material.

Q. Have you also handled bricks that were made from materials that were moist and then bricked?

A. Yes, sir.

Q. Moist to an extent greater than 10 per cent, and air-dried? A. Yes, sir.

Q. Have you also handled bricks that were made up and then kiln-dried or fire-dried? A. I have.

Q. Is there a difference in their consistency?

A. There is. The sun-dried brick if it is properly made has a slower evaporation of the moisture contained in it than the kiln-dried brick, and in the evaporation of the sun-dried brick it seems that the binding material sets harder, whereas in the kiln-dried brick the moisture being driven out at a rapid rate, seems to disintegrate the brick to a certain extent, and possibly also drives off a part of the binding material, so that the brick is not nearly so substantial if it is kiln-dried as if it is sun-dried.

Q. What is this binding material that you refer to?

[409]

A. It is a portion of tar and the lighter hydrocarbon.

Q. Having in view your knowledge of the bricks made in these different ways, those that are substantial and those that are unsubstantial, I will ask you

(Testimony of B. S. Pederson.)

again if in your opinion the apparatus furnished there or installed there for the purpose of handling the fuel into the generator would have handled it in proper manner if the fuel was properly made and was a substantial brick? A. It would.

Q. But with the material furnished during this test—the kiln-dried brick—did it so handle the fuel?

A. It did not. By the time the bricks went through this process or being put in the skip and raised and slid down, it was disintegrated to the extent that at least twenty-five or thirty per cent of it became actual dust, and that dust sifted through the slots that we had in the chute, and these slots being made naturally with spaces of iron between them—that is, a slot and a space of iron and then another slot—and the slots being an inch and a half in diameter and the strip of iron about two inches, about half of the surface of the slot would allow the dust to go through, and through these apertures twenty-five or thirty per cent of the brick would go through in the form of dust. Now, on this other part where the slot was not made, there was always a quantity of dust that we could not get rid of because we did not have a shaking apparatus on that part which would have helped sift it through, and it slid through—the portion that happened to be over the slot would go through, and the rest would go into the machine.

Q. Can you give us an idea of how much fine dust went into the machine?

Q. (By the COURT.) What observation did you make? [410]

(Testimony of B. S. Pederson.)

A. I was on the floor—not continuously, but off and on during the entire time—and possibly seventy-five per cent of the time that we charged that machine. I wasn't there all the time. But every time we charged the machine we would be over there and looked in there and saw the material come down and we would observe the condition of the floor.

Q. And you did that?

A. I did that. I would say from my observation practically as much dust went into the machine as was sifted through. About the same proportion.

Q. Did this dust or fine material evidence itself at any other place than going down the chutes and going through the slots?

A. It evidenced itself in going over into the carbureter and chamber, and gathering there.

Q. Is there a means provided for taking the dust that passes over—

A. There is a means provided for taking it over; for taking it over in such quantities as you could reasonably expect that it would come over.

Q. And is there a means provided for taking it out from there? A. Yes, sir.

Q. Did you ever see any of it removed?

A. I have seen a great deal removed.

Q. How often during a shift did they remove it?

A. Once. We would remove it every time we cleaned the generator. That is, scratched the bars. That is the only cleaning that was required on the generator. We would open the generator and then go around and remove that carbon-dust.

(Testimony of B. S. Pederson.)

Q. What was done with it?

A. It was put with the waste carbon from the bottom under the grate-bars, and they would weigh it and cart it away. [411]

Q. And was track kept of it? A. Yes, sir.

Q. And is that a part of the waste mentioned on these cards which has been deducted from the total carbon? A. It is not.

Q. Do you know what the material was that passed over into the carbureter and was removed from that chamber? A. It is principally carbon.

Q. How about that that was removed from under the grate-bars?

A. That would have a certain proportion of ash in it or dirt. It is not really an ash. It is really a dirt, but it answers to the name of ash—proportion to the ash in the fuel originally placed in the generator.

Q. That was all removed and wheeled away and turned back to the gas company?

A. It was turned back to the gas company, yes. They hauled it away.

Q. When the fuel was porous, did you notice any increase of those deposits? A. I did.

Q. To what extent?

A. Different qualities of the same fuel each day, and some days it would be abnormally bad, and we would get more of this dust over. But just to what per cent I would not be able to say. It would be, I should judge, about the same per cent that the waste carbon would show to the carbon delivered. It would approximate the same.

(Testimony of B. S. Pederson.)

Q. Have you got a memorandum of the weights of the quantities of that material that was removed during the test?

A. I haven't here. Perhaps I have. Yes, I have some here. [412]

Q. Do you know who weighed the stuff?

A. The same men who weighed the carbon furnished to the machines. I think it is in evidence. It is on these cards.

Q. Are the weights the same as mentioned on these cards? A. I would have to compare.

Q. But were the weights turned into you or Mr. White?

A. None of these weights were turned into us. We secured these weights by examining the cards and inquiring.

Q. Was this date made up from the records furnished you?

A. It was made up from the records that were given to us.

Q. How long was the machine in operation after you arrived here on the 12th?

A. Two days, I think.

Q. And what happened at the expiration of the two days?

A. We shut down the plant to clean out the carbureter, and to determine what the difficulty was with the machine. It was not properly balanced. We didn't seem to have it properly balanced at the time, and I closed it down as we found that one trouble was with the carbureter.

(Testimony of B. S. Pederson.)

Q. What led you to believe there was trouble in the machine somewhere?

A. The blast acting on that fire didn't seem to go through the fire and didn't seem to come out through the superheater—the blast would be a lazy blast. There should have been a nice clear blast through the machine. Instead of that, in the stack valve it showed a very lazy flame—the red blast of the gases—indicating that the stoppage must be there in the generator itself or some other part of the machine.

Q. Did the variation in the make have anything to do with indicating that there was some defect?

A. Oh, yes; that would also indicate it. [413]

Q. In what regard?

A. In the make falling down it would indicate that there was generator trouble.

Q. And after you shut down what did you discover?

A. We discovered that the trouble was in the carbureter and that it was blocked up or choked up with carbon and carbon dust.

Q. Do you know where it came from?

A. There is only one place it could come from, and that would be the generator, and, partly from the oil sprays. The oil coming in contact with this dust would apparently form a cake in there, and fill down to the openings between the brick and close them up. They would adhere to the side and gradually close them up.

Q. Do you know what caused the dust to be blown over into the carbureter?

(Testimony of B. S. Pederson.)

A. By the air blast which was applied to the generator to consume fuel.

Q. Did the condition of the fuel that was passed into the generator have anything to do with it?

A. It had everything to do with it. The fuel coming in there in the form of dust, and this dirt picked up by this blast and carried over to such an extent that it filled up the carbureter with dust.

Q. Do you know whether the carbureter was clean when you started or not? A. I do not.

Q. Was there anything in the fact that it clogged up so soon that would indicate whether it was or not?

A. There is. I would say that the machine was not cleaned to start with, or it would run more than three days before clogging up. [414]

Q. After you closed down, to what extent did you find the carbureter clogged?

A. Wholly so. It was a problem to me how any gas got through when we opened it up and looked in. It seemed to be completely closed up.

Q. What effect did the deposit of this dust on the carbureter bricks or fire bricks have upon its efficiency or ability to make gas—oil-gas?

A. It ruined the capacity of the machine, so far as making oil-gas.

Q. Why?

A. It did not have the surface in there to gasify or vaporize the oil. The only opportunity there was for any of this oil to become mixed with gas under those conditions, would be that the oil would be picked up by the gas coming from the generator and

(Testimony of B. S. Pederson.)

gasified in that respect. The body of the carbureter itself did not seem to do any of the work that it was supposed to do.

Q. In order to get efficiency in the fire-bricks in the carbureter, should they be reasonably clean?

A. Yes, sir, they should be entirely clean.

Q. How high are they heated?

A. They are raised to a temperature of 1200 degrees.

Q. Does the coating on the checker-bricks have anything to do with the absorption of heat?

A. Yes, sir. It nullifies the effect of the heat. Just like when there is a coating on the carbon and it would become hot. The immediate contact of oil or spray would cool it off. It is not a good conductor of heat. It would contain this small volume of hot carbon on the outside and immediately cool off.

Q. After you closed down the machine what did you do? [415]

A. We removed all the bricks in the carbureter and replaced them with new ones.

Q. How long did that take?

A. Something over two days and nights, working night and day.

Q. What time in the morning or day did you shut down?

A. We shut down about eight o'clock, I think it was. Between seven and eight o'clock in the morning that we closed down.

Q. (By the COURT.) That was the 12th.

A. That was on the 14th.

(Testimony of B. S. Pederson.)

Q. (By Mr. CHAPMAN.) How much gas did you make that day that you closed down?

A. I think about 70,000 feet.

Q. Did you put any fuel into the machine that day?

A. No.

Q. How did you happen to make any gas on the day that you shut down?

A. For the reason that it was customary to run through from cleaning to cleaning. For example: in the evening we usually clean about seven or eight o'clock. It seems that a shift of men came on about that time—perhaps at seven o'clock—but that conforms to their usage as to the work, and we either had to start—I wanted to get through to the next cleaning, and we ran over the six o'clock hour and went to 7:30.

Q. Then, you say you occupied the next two days or part of the next two days in the work of re-checkering? A. Yes, sir.

Q. What time did you complete the work?

A. The work was completed, so far as the checker-brick is concerned some time in the afternoon while Mr. White was in [416] charge. I put on the doors and closed up the carbureter during the evening, and I started up about three o'clock in the morning or about that time.

Q. Did you make any gas that day? A. Yes, sir.

Q. How much?

A. Just a small quantity. I don't recollect the exact amount. I could possibly refer to that. 107,000 feet. About an hour's run.

(Testimony of B. S. Pederson.)

Q. Now, in the course of re-checking, was there a shift engaged night and day? A. Yes, sir.

Q. And the work was prosecuted with as much expedition as possible? A. Yes, sir.

Q. And after you built up your fires and started to make gas the next day, what kind of fuel did you have?

A. The fuel was poor. We found considerable dust coming with it, and began to have fire trouble. We didn't seem to be able to get fuel for any length of time that we could depend on at all. Occasionally they would give us a load that was fairly good—better than the other fuel. But we found it was in poor condition generally.

Q. Then on the 18th, the day that the protest which was offered in evidence was made by Mr. White, what kind of fuel did you have?

A. Just about as bad as they could make it, and have any form at all.

Q. Did it improve any after the protest?

A. After the protest we had a few loads of a little better brick, and about the time we would think we were getting the fire along in a little better shape, they dumped a lot of [417] this other stuff, and it ruined our fire again.

Q. What appearance did the fire have?

A. At what time?

Q. I mean when you had this very bad fuel?

A. Immediately after a change, naturally the fire would appear black on top, and the lumps of brick would be spread in there. But after a few runs it

(Testimony of B. S. Pederson.)

would get a reddish appearance and look something —you might say like cobbles with a lot of sand between them, dancing up and down there in the blast.

Q. How did it appear in comparison with the way it ought to have appeared and customarily does appear when the fuel is in proper shape?

Mr. GOUDGE.—Objected to as calling for the conclusion of the witness, and on the ground that no foundation is laid for it. On the contrary, the witness testified that he did not have any experience with this fuel except here.

The COURT.—The objection is overruled.

(The plaintiff excepts to ruling of Court.)

A. Ordinarily, a fire in a generator, using coke would have a bright and rough appearance. The lumps would show distinctly in there and you could see the blaze and heat coming through. It would be one porous equalized fire. That is, the fire would be apparently throughout the mass.

Mr. GOUDGE.—I move to strike out as not responsive to the question, and his answer discloses that the witness is not able to say how a carbon fire ought to look, because he has no experience with carbon fire, and he himself has admitted it.

The COURT.—He had a great deal with coke.

Mr. GOUDGE.—Yes, but he should not be permitted to say what coke looks like in answer to a question as to how a lamp-black fire ought to look. He doesn't know how a lamp-black fire should look.

[418]

Mr. CHAPMAN.—He has explained that they are

(Testimony of B. S. Pederson.)

precisely the same thing. Coke is carbon and lamp-black is carbon and anthracite is carbon.

The COURT.—The objection is overruled.

(Plaintiff excepted to ruling of the Court.)

Q. (By Mr. CHAPMAN.) Did you have any trouble with holes blowing through the fire and black spots appearing?

A. We did. That is a condition that will occur with fuel of that character. The blast will work on one spot and may find one opening. It is always working to find an opening through the pile, and after it has obtained an opening it will blow that place clean of dust for a time and it will make an aperture for the steam to come through. The steam follows the same course. Then, naturally, the surface being small and the quantity of steam large, it quenches the fire at that point and develops what we call a black spot in the fire. When that does appear, it means that we are passing great quantities of steam through an opening but not getting the efficiency of the machine or the fuel. It is a condition that must be remedied immediately. As soon as the black spot is observed we remedy it by trying to pour more fuel in, and closing it up and diverting the steam to other parts of the fire.

Q. How is that black spot discovered?

A. When we open to charge. Every time we charge we open and see the condition.

Q. Don't you also have sight holes?

A. Yes, we have them in the generator, but as a general thing they are not used much, but they are more

(Testimony of B. S. Pederson.)

used in watching the temperature of the carbureter and superheater. There we use sight holes very extensively. But we open the generator [419] once an hour, anyway, approximately, to charge, and while occasionally you may look down a sight hole, it is not used as a general thing.

Q. After the protest of the 18th, you say there was some little improvement in the fuel at the time?

A. Yes, sir.

Q. How long did it continue?

A. It didn't continue. After the protest I think there was something said about giving us different fuel, and they did give us some different fuel for a short time. But it gradually became worse and worse, and while they would shoot in a load of a little better fuel, the general conditions were not much better than they were before—the average condition.

Q. Now, on the 23d, the day it appears when that protest was again entered against the quality of the fuel, what was the character of it on that day?

A. If anything it was worse than it was on the 18th.

Q. Did you have any hot fuel on that day?

A. Yes; we had hot fuel on that day and we had hot fuel on the 18th. That is, it was not hot, but it was warm. I remember taking up some of the bricks myself and they were actually warm, and I could squeeze them like that and they would fall apart. It seems the characteristic of the fuel was that while it was hot it had a tendency to fall apart by its own weight, almost, or at the slightest touch.

(Testimony of B. S. Pederson.)

Q. How was it when the bricks were warm rather than hot?

A. I will say these were not really hot; they were warm.

Q. You are referring to warm brick?

A. Yes, sir.

Q. Does the warm brick fall apart as you have described it?

A. Yes; it was a warm brick that I took hold of. It was not a hot brick. [420]

Q. To what extent were those bricks delivered there?

A. I should say at that time probably 50 per cent of the bricks delivered were these freshly heated bricks, or not cold bricks, but warm bricks.

Q. Do you know how they were heated?

A. Yes.

Q. How?

A. They were kiln-dried. That is, they were placed in a pile somewhat in the manner that bricks are placed to be baked, and a fire built in an oven that was constructed of these same bricks, and the heat from the fire penetrated the openings surrounding the bricks. The fire was made of lamp-black right there on the ground.

Q. Did you observe any burning or heating of the kilns across the street?

A. I did, just casually, though. I didn't go over to examine. I was there at night, and I came over once or twice.

Q. Did you see any smoke?

(Testimony of B. S. Pederson.)

A. A great deal of it. The smoke resulted from the lamp-black that they were burning in the opening of the kilns, and possibly some of it may have been hydrocarbons driven from the brick that they were drying.

Q. Would you recognize a representative sample of the character of brick that you were using at that test, if you saw it? A. I think I would. [421]

[Testimony of E. C. White, for Defendant.]

E. C. WHITE, called on behalf of the defendant, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. You are Mr. White referred to in the course of the testimony as one of the operators who had charge of this test? A. Yes, sir.

Q. After the test was completed, did you take any sample of bricks from the piles from which deliveries had been made during the test? A. I did.

Q. Did you select that at random or did you make a special selection with a view of showing poor condition of fuel?

A. I selected an average brick off the pile.

Q. What did you do with it?

A. I wrapped it up in a paper—that especial one—and tied a string around it.

Q. And labeled it? A. Yes.

Q. From what place did you get the brick?

A. In the place across the street from the water-gas set.

(Testimony of E. C. White.)

Q. And, after procuring the brick, what did you do?

A. I wrapped them up and put them all together and put them in a grip and placed them in the Braun Chemical Company's warehouse, with the chemist.

Q. And they have been there ever since?

A. Yes; those that have cans on were soldered up at a tin shop.

Q. And sealed or tied? A. Yes, sir. [422]

Q. I direct your attention to this brick in this can and ask you if that was one of them that was selected?

A. It was.

Q. Can you tell when that was selected?

A. It is marked on the paper that I took off.

Q. Is this the paper that you refer to?

A. Yes, sir.

Q. And referring to that, can you state the time when you selected the brick?

A. May 27, 1910. A brick taken from the yard of the L. A. Gas and Electric Corporation, 4½ pounds, kiln-dried, taken 5-27-1910 by E. C. White.

Q. And this brick also you placed in the possession of Mr. Maas the chemist? A. Yes, sir.

Q. And it has been there ever since till within the last few days?

A. Till I saw them out here at Mr. Trippet's office. I don't know who brought them up.

Q. When was this can opened?

A. It was opened just now. I took it out on the step where I could bear down on it.

Q. Has it been opened at all during the time from

(Testimony of E. C. White.)

that time up to this time? A. No, sir.

Q. It has been sealed all the time?

A. As far as I know.

Q. Would you say it was an average sample of those delivered to you during the test?

A. Yes, sir; I took average samples. They are all about alike.

Q. Did you ever test any of these bricks as to their tensile strength, by handling them? [423]

A. Yes, sir; I have handled them.

Q. Are they easily broken or otherwise?

Mr. CHAPMAN.—We withdraw that question.

Cross-examination.

(By Mr. GOUDGE.)

Q. Mr. White, both these bricks that you speak of that are produced here, were taken by you on the same day?

A. I would have to look at the paper to see that. I don't think so. This brick was taken on May 14th.

Q. That is, the one in the paper and not in the can? A. Yes, sir.

Mr. GOUDGE.—Are you going to put in any more bricks?

Mr. CHAPMAN.—Yes, I would like to identify this package that I now hand you.

Q. State what that is and whence it came.

A. This was made after the test or taken after the test; fresh, just made, a lamp-black brick taken at the gas company's press, of the Los Angeles Gas and Electric Corporation, May 27, 1910. Five pounds weight.

(Testimony of E. C. White.)

Q. I now direct your attention to this second package that I show you. Please state what that is.

A. Two bricks, samples taken from L. A. Gas and Electric Corporation's yard, between March 10th and 30th, 1910. These bricks were selected and are well filled out. Most of the bricks have their ends knocked off, caused by the dies being worn, and moulds not being properly filled.

Q. (By Mr. GOUDGE.) We have four different specimens here, Mr. White, and the one that I will designate as wrapped in paper— [424] the first one spoken of which was taken on May 14th, and one that was in the can which was taken on May 27th?

A. Yes, sir.

Q. One package containing two bricks during the test? A. Yes, sir.

Q. From the piles?

A. No, from the—yes, sir; these were taken from the yard across the street. I am not sure whether they are sun-dried or kiln-dried, but they are well filled out. They were made with the new dies. I think they are a fresh brick because no kiln-dried brick were made with the new dies. They got a new set of dies and I took the bricks to show the difference between the new and the old.

Q. The package that contains the two bricks together with the new bricks made at that time?

A. Yes, sir.

Q. And the fourth is also a fresh brick taken freshly from the press, but that was taken May 27th, 1910?

A. Yes, sir.

(Testimony of E. C. White.)

Q. As to those two last specimens, the one taken fresh from the press May 27, 1910, and the package containing the two which were new bricks, those are not a part of the bricks that were being furnished to you during the actual test—not a part of the brick furnished you at that time? A. No, sir.

Q. Then, eliminating them, we will come back to the brick in the paper and the brick in the can. The brick in the paper was taken May 14, I understand you, and the brick in the can May 27. Is that right?

A. Yes, sir.

Q. Were they taken from piles from which brick had been [425] delivered to the generator during the test? A. Yes, sir.

Q. What portion of the piles were they taken from? Had they been subjected to artificial heat?

A. Well, the piles had been subjected to artificial heat.

Q. And the brick in the paper, taken May 14, selected by you May 14, and the brick in the can selected by you May 27? A. Yes, sir.

Q. What part of the piles were bricks taken from, whether outside of the piles or the side of the pile next to the fire, or the interior of the pile or the side away from the fire?

A. I can't tell you that. I just walked in there and reached over and got one.

Q. Were these piles under cover at the time you got these bricks? A. No, sir.

Q. Do you know whether between March 30th, 1910, and May 14th or May 27th, 1910, it had rained

(Testimony of E. C. White.)

in this city? A. I don't remember.

Q. Do you know whether subsequent to March 30, 1910, these bricks had been subjected to artificial heat—whether the fire had been kept up near these bricks since that time? A. Since the 30th?

Q. Yes, of March.

A. I think all the fires were out on the 30th, if I remember correctly.

Q. Do you know whether any new firing had been done to these brick—the one in the paper and the one in the can—subsequent to March 30th and prior to the day you took them, or had they been left cold?

[426]

A. They had been left cold. There was no fire there.

Q. During all that period from March 14th to May 27th?

A. There may have been a little fire subsequent to March 30th, but it was immaterial if there was. It was so small. I think they endeavored to let the fires go out. They had no reason to keep up the fire.

Q. You say these two bricks were not selected as either favorable or unfavorable, but were average samples of the kind of brick furnished you during the test?

A. Yes, sir; it would have been hard work to get any that were better or worse than that. They were all about the same.

Q. They were tolerably uniform?

A. Yes, sir.

Q. How long an acquaintance did you have with

(Testimony of E. C. White.)

the brick in the piles that you are able to say these are uniform samples? What prior investigation and for how long a time had you been familiar with the bricks in these two piles? A. During the test.

Q. And you knew nothing of them before that?

A. I may have seen them there; yes.

Q. How long before?

A. From the time I arrived. I arrived on December 9.

Q. And these were the same piles that had been there?

A. They were the same piles. They had not moved any of them away.

Q. That is, these represent the kiln-dried brick?

A. Well, the sun-dried bricks were re-piled in kilns, in a convenient manner, and kiln-dried.

Q. Are these sun-dried bricks?

A. Sun-dried and then kiln-dried afterwards.

Q. How do you know they were sun-dried? [427]

A. Because they had been in the yard from the time I got there. At least, till they commenced to put the kilns in.

Q. The time you got there was December 9?

A. Yes, sir.

Q. You don't mean they were sun-dried since December 9, do you?

A. They were sun-dried from December 9 until the time they were kiln-dried.

Q. Sun-dried?

A. What does "sun-dried" mean? It means laying out in the sun.

(Testimony of E. C. White.)

Q. Do you know how much sun there was during that time? A. No, sir.

Q. You know there was a good deal of rain, don't you?

A. There was some rainstorms, but I don't know how much rain. I paid no attention to it. These bricks were covered up when it rained.

Q. How long does it take to sun-dry such bricks as these?

A. I don't know that there is any especial process—

The COURT.—Wouldn't it be well to postpone questions of that character until he is called generally?

Mr. GOUDGE.—Yes; but may I ask one or two questions?

Q. When you speak of these bricks being sun-dried, did you mean to imply that in these piles from which the bricks were taken and delivered to you during the test, there was some bricks that were sun-dried and some that were not sun-dried, or were they all of the same character?

A. I mean to say that there was great piles of bricks there on December 9th, and they stayed there until they commenced to kiln-dry, and they had a big lot of Mexicans there and rearranged the whole pile, but they brought none in and took none away that I saw. [428]

Q. So, if they were sun-dried, they were all sun-dried? They were of the character of bricks?

A. I can't say, unless I made an analysis of them;

(Testimony of E. C. White.)

I couldn't say what percentage of moisture they were. I would say that the ones on the outside were drier than the ones on the inside.

Q. Can you say whether this break in the corner occurred as you opened the can just now?

A. I think this little break did. Yes, sir. I put it down and held it near the floor, and some of it dropped off. You can see it out there.

[**Testimony of B. S. Pederson, for Defendant
(Recalled).]**

B. S. PEDERSON, recalled and his Direct Examination resumed.

(By Mr. CHAPMAN.)

Q. I direct your attention to the two bricks identified by Mr. White as coming from the pile from which the brick were taken that were delivered to this machine during the test, and ask you if those bricks appear to be in the same condition in a general way as the average brick that was delivered to the machine?

A. This brick here appears to be harder. This one here seems to be more substantial than the other.

Q. Do you observe the fissures or cracks?

A. I do, but the general condition of it by being exposed has become considerable harder. It is a longer time since it was kiln-dried. There is an atmosphere process of—

Q. I notice this brick appears to have chips out of it. Do you know whether the fresh bricks that were delivered there showed holes in them or chips out? [429]

(Testimony of B. S. Pederson.)

A. A good many of them did. We noticed that they were not perfect brick. But I did not attribute that to any particular cause. I think it was caused largely by handling the brick in getting them over there.

Q. (The COURT.) Are there any fissures in this brick? You speak of some brick having fissures in it.

A. Here.

The COURT.—That is what you mean by fissures? Can you make any impression on that brick with the finger?

Mr. EDWARDS.—This is as hard as I can press.

The COURT.—It does make that impression.

(Mr. Edwards taps the end of the brick with a pencil or penholder.)

Mr. EDWARDS.—That gives an idea.

Q. (By Mr. CHAPMAN.) You heard some mention made in the testimony of Mr. Creighton and Burkhart of a leakage in the generator. Was there a leak there?

A. There was.

Q. Did it give any particular trouble during the test?

A. Well, it didn't give any particular trouble so far as the operating was concerned or the running of the apparatus. It was a little inconvenient for the men who were operating to have this leakage there. I wouldn't consider it an ideal condition for a man to work in, but it was a condition that could be remedied with very little trouble. Another thing

(Testimony of B. S. Pederson.)

is, a great deal of what they thought was leakage was not really leakage, but it was a condition that was caused by the fact of this fine dust coming from the chute on the floor and sifting down between the floor plates and filling up on the generator and becoming heated, so that hydrocarbon gases were driven off. I have seen them catch fire from the heat that naturally comes from the top of the generator, and that would cause a great [430] deal of smoke, and I considered that caused really more inconvenience than the leakage around the generator.

Q. Was there any gas that came from any other source during the test at any time that disturbed the men and made it objectionable around there?

A. Not gas. It was the smoke coming over from the kiln that inconvenienced the whole works in the whole neighborhood. I wouldn't call that gas. It was in the nature of smoke.

Q. Was there any leakage from any of the other generators belonging to the company that disturbed the men?

A. I didn't go around very much. I was on duty at nights and didn't have much opportunity to investigate the other parts of the works.

Q. How about that valve that Mr. Creighton mentioned as becoming hot or inconvenient to operate?

A. That is one of our standard valves, and with conditions of operations correct, it would give no difficulty whatever, and it did not give any difficulty until the carbureter being clogged with this fuel

(Testimony of B. S. Pederson.)

and carbon would react on the gases coming over and causing a back pressure there that hit against the valve. It was really on the outside of the apparatus, but this back pressure and reflected heat would hit the valve, but never to such an extent that it would not operate. We never lost a minute in the operation of all apparatus on that account at night, and so far as the reports show there was no interruption in the day-time either.

Q. How about the grate-bars that they complain set the other way?

A. That is largely a matter of opinion. If the fire was of such a nature that it contained a great many clinkers to spread over the grate bars, it might have been more convenient [431] to have the bars so placed that we could scratch up under the bars, than to have them stretched across. But that fuel having so little clinkers, it is a negligible factor. It does not matter which way you place them, although it would not have been a great deal of trouble to turn it around to suit the gas company.

Q. How about the machine as a whole? Was there anything that could not have been rectified so that the apparatus could be put in working order by the expenditure of money after the test was completed?

A. The machine was in absolutely right and good condition in every respect, with the exception of the little link in the top of the generator, and a new valve which we had already figured on putting into the blast valve in place of the temporary one that

(Testimony of B. S. Pederson.)

we put in there, and possibly straightening up the brick in the superheater.

Q. During the test did you know that there were any bricks down in the superheater?

A. I did not. I didn't notice them at that time.

Q. Do you know when that occurred?

A. I do not.

Q. Or how it occurred?

A. I can only theorize. I did not see the brick myself that were down. I didn't go on top to look down to see if there were any down.

Q. Do you know of your own personal knowledge whether any offer was made by anybody on behalf of this company to Mr. Luckenbach or any other officials of the gas company to place this machine in proper condition if they would accept it or grant you the privilege of another test?

A. I know of that offer being made.

Q. To whom was it made? [432]

A. To Mr. Luckenbach, but not by me.

Q. Were you present? A. No, sir.

Q. How about the charging floor? Was there anything wrong about the charging floor?

A. Nothing wrong with the charging floor as a charging floor. Operating floor, you mean, I think.

Q. Operating floor.

A. The floor was by reason of the generator top expanding, raised a certain distance to that it was not absolutely level; but the correcting of the generator top would correct that. And correcting the generator top meant placing a couple of I-beams across

(Testimony of B. S. Pederson.)
there to strengthen it.

Q. Before this test was finished, that is, before the 20 days expired, during the last day or two particularly, the machine showed a falling off in the make? A. Yes, sir.

Q. Do you know what the reason for that was?

A. The reason was fuel conditions that we had in the generator, and towards the last that reacted on the carbureter, so that we had abnormal conditions in both machines.

Q. If a substantial brick of this material had been furnished for your purposes during the test, could the machine have been operated continuously to the end of the time of the full 20 days?

Mr. GOUDGE.—Objected to as calling for the conclusion of the witness, and also that it is irrelevant and immaterial, the contract not calling for substantial brick or any brick different from the brick actually furnished.

The COURT.—That involves an interpretation of the contract. I will let the evidence come in at this time. The objection is overruled. [433]

(Plaintiff excepted to ruling of the Court.)

A. Yes, I think it could.

Q. From your knowledge of the operations of plants of this kind, and especially your observation of the conduct of the carbureter, do you know what the effect would have been as to keeping it clear under ordinary conditions—under normal conditions—if the machine had been laid off once a week during this period of the test?

(Testimony of B. S. Pederson.)

Mr. GOUDGE.—Objected to as irrelevant and immaterial.

The COURT.—Isn't that quite material as tending to show whether or not—isn't this important, whether or not under ordinary usages they should have been allowed one day a week to stop the machine for the purposes indicated?

(Discussion.)

The COURT.—The objection is overruled.

(Plaintiff excepts to the ruling of the Court.)

A. Starting with a clean machine and having fuel conditions in accordance with the proper practice of water-gas making, there would be no difficulty in keeping that machine clear by using one day a week, for an indefinite time I should say.

Mr. GOUDGE.—I move to strike out the answer as not responsive to the question. He puts in a good many other contingencies. For instance, having ideal fuel.

Mr. CHAPMAN.—He said normal conditions.

The COURT.—I will let the answer stand.

(Plaintiff excepted to ruling of the Court.)

Q. (By Mr. CHAPMAN.) Are you able to state, Mr. Pederson, from what you know about this apparatus and gas-making generally, whether the machine could have been kept clean during the period of 20 days operation, even with the fuel that you had and under the conditions that you had if you had been allowed and had taken [434] one day a week for cleaning out?

Mr. GOUDGE.—The same objection.

(Testimony of B. S. Pederson.)

The COURT.—The same ruling.

(Plaintiff excepted to ruling of the Court.)

A. I think that we could have kept it clean, beginning with a clean machine, and burning out one day a week, even under the conditions that we were operating under at that time.

Q. If that had been done with the fuel that you had, would you have gotten the efficiency of the plant?

A. That is another question. I hardly think we would have gotten the efficiency with that fuel, though we might have kept the machine clean, for the reason that we were not able to get our fire in a condition to make the amount of water-gas.

Q. Did you have any talk with Mr. Luckenbach on the subject that if they furnished you brick containing more than ten per cent moisture during the test, that you should be allowed credit in the fuel consumption for the excess weight of water?

A. I did have such a conversation with him.

Q. Was it before this test? A. It was.

Q. About how long before the test, approximately?

A. Well, it is difficult to say whether that was during the time I was there at that explosion test, as you might call it, or the time before that. It was sometime between the last contract and the test. Just what date it was I don't remember, but the conversation was held in his office. And, in explaining to him why we wanted dry fuel, I said, "You must realize that if you take a fuel with twenty-

(Testimony of B. S. Pederson.)

five per cent moisture or fifteen per cent moisture and put it in a fire, you are just throwing that much water in the generator and being charged with fuel. Now, then, it takes not only that much fuel, but it takes so much more fuel to drive that out and bring the generator [435] back into condition. That if we should accede to your request and suggestion that we use fuel with some moisture, will you give us credit for that extra moisture?"

Q. What did he reply?

A. They refused to consider that. Then I think the matter came up of demanding dry fuel, and I wrote a letter to that effect, countermanding Mr. White's letter asking for fuel with more moisture. It may have been between those two letters, but I am not positive as to that.

Q. Where is the candle-power or luminosity of gas made and provided for in the operation?

A. In the carbureter.

Q. Will you explain how that comes about?

A. The luminosity of gas is caused by the injection of oil into the carbureter. The gases coming from the generator combine with the vapors and gases created by the heat in the carbureter, and this vapor enriches the water-gas or blue-gas coming from the generator. It passes on through the carbureter and is fixed or made a permanent gas in the superheater; part of the vapor passing over there is always gasified.

Q. The water-gas from the generator is not luminous? A. No, sir; it is not luminous.

(Testimony of B. S. Pederson.)

Q. What proportion of the whole gas as it leaves the plant does the gas formed in the carbureter from the use of the oil form?

A. Approximately 30 per cent.

Q. And the lighting power of the gas produced from the apparatus depends entirely on the oil-gas? A. Yes, sir.

Q. Can you regulate the luminosity of gas produced in that manner? A. You can. [436]

Q. In what manner?

A. It is only a question of putting more or less oil. That is one way of regulating. There are several ways of regulating the candle-power of gas. For example, we are making a certain quantity of gas, and it shows a certain candle-power. I want to increase or decrease that candle-power. I can take the oil as the basis of regulation, or I can use the steam as a basis of regulation, or even the blast, in the manner of heating the apparatus.

Q. It is merely mechanical or an expedient of operation?

A. It is an expedient of operation, and depends on the operator largely as to which method should be used. If I were running the apparatus to full capacity of the carbureter—all the oil the carbureter would take—and I would still require a higher candle-power, I would reduce the amount of steam in the generator to conform to the amount of gas that I am making. That is just an illustration of how that would be accomplished.

Q. Do you know where this gas went that was

(Testimony of B. S. Pederson.)

produced by this machine during the test?

A. It passed from the machine to the customary apparatus—seal, scrubber and condenser, into the water-gas relief holder.

Q. And from there was mixed with the other gases produced by the gas company?

A. From there it was pumped through the meter and, I believe, the purifiers into another holder, where it was mixed with other gases.

Q. During the test at any time did you produce candle-power gas in that apparatus?

A. We did, several times.

Q. (By Mr. CHAPMAN.) Why, if you know, did you produce candle-power on an average of 20 instead of 19, as the actual [437] results show?

A. We always make candle-power on a water-gas machine to conform to the requirements of the works for which we are putting in the machine.

(The witness' answer is interrupted by the adjournment.)

(Whereupon an adjournment was taken until 2 o'clock P. M.)

Q. During the 20-day test did you ever have any conversation with any of the Gas Company men down there with respect to the candle-power to be maintained? A. I did.

Q. With whom?

A. With a man who had charge of the photometer reading: Mr. Robinson, I think his name is.

Q. That was the man that has testified here with respect to the fact of his readings of the candle-

(Testimony of B. S. Pederson.)

power? A. Yes, sir; the same man.

Q. Did you talk with him more than once?

A. Yes, sir; a number of times. It seems to be his duty to inform us as to the candle-power.

Mr. GOUDGE.—We move to strike out that statement of the witness.

The COURT.—Let it go out.

A. At any rate, he assumed that duty, and being in charge of that, and whenever there were any variations in the candle-power, he would notify me and tell me, for example, that it was too high or too low to conform to the conditions here.

Q. When he would notify you that it was too high, what would you do?

A. We would regulate our machine so as to bring the candle-power to the point that they wanted it, or at which it was satisfactory to them.

Q. Except for those instructions could you have maintained [438] the candle-power at an average of 20?

A. Without doubt.

Q. Would you have done so without instructions?

A. Without instructions we would have done so.

Q. From your knowledge of the gas-making business and in your studies on the subject and contact with professional men in the business, do you know how the efficiency of an apparatus for making gas of a certain candle power is customarily expressed?

A. I do know. I have myself on several occasions, in testing out apparatus, figured it in the customary terms and so mentioned it.

(Testimony of B. S. Pederson.)

Q. And how is the efficiency in that regard customarily expressed?

A. In the trade it is generally meant the ability of that machine to produce a candle-power or certain rate of light for a certain amount of oil. For each gallon of oil it must produce so much candle-power. In other words, to use the expression that we ordinarily use, the efficiency of the machine is figured on the ability of that machine to produce so many candles or so much candle-power per gallon of oil used. For example, if we use one gallon of oil it would produce so many candle-power in that case. If we use five gallons of oil it would produce so many. The general construction of any contract made on water-gas apparatus is to proportion the candle-power to the amount of oil used. In other words, so many gallons of oil will produce a certain result. Each gallon so many candles, figuring on the basis of a thousand cubic feet measured.

Q. If you say, then, a machine is averaging a production of 20 candle-power gas with the use of five gallons per thousand feet, what is the efficiency?

A. The efficiency would be four candles. If I use four [439] gallons and say 16 candle-power, I would have the same efficiency as if I produce a 20 candle-power on five gallons.

Q. And when, as in this contract, it is said that it would produce 20 candle-power, using four and a half gallons to a thousand feet, what would be the candle-power efficiency?

A. A candle-power efficiency figured on that same

(Testimony of B. S. Pederson.)

ratio would be that one gallon of oil would produce 4.44 candle-power per thousand feet.

Q. Then, if you use four and a half gallons of oil, you would have produced 20 candle-power gas?

A. Exactly.

Q. The water-gas itself, I believe you have explained, has no luminosity?

A. No, sir; no luminosity.

Q. Without the use of oil—

A. Without the use of oil it would have no candle-power.

Q. And the use of oil and the quantity of oil determines the candle-power? A. Yes, sir.

Q. Besides Mr. Robinson did you have any conversation with anyone on the subject as to candle-power you were to maintain during the test?

A. I think not.

Q. Before this test was started did you see that Sugg photometer by means of which candle-power measurements were taken?

A. Yes, sir, some time before. I noticed it.

Q. Did you ever make any careful estimation of it as to the accuracy of it? A. I did not.

Q. Upon what did you rely for the supposed correctness of the instrument? [440]

A. I relied on the statement of the men at the works who had charge, that it was properly adjusted or that the proper correction was made, for the standard candle-power, just the same as I relied upon them when they made the statement that the meter was correct, and that they would have the

(Testimony of B. S. Pederson.)

proper correction for temperature and pressure. It is not a customary rule for the contractor to take into question the apparatus around the works. They are all accepted with the understanding that they are up to the standard, and all calculations and measurements are to be brought to standard or corrected before the figures are admitted.

Q. And if, as a matter of fact, that instrument was not so adjusted as to properly and accurately record the candle-power, did you know that at the time this test was undertaken, at the time you accepted the reading of that instrument as the candle-power observation?

Mr. GOUDGE.—We object to that as argumentative and calling for the conclusion of the witness, and not based on any fact in evidence.

The COURT.—I don't believe there is any testimony as to any defect in the instrument.

(Discussion.)

The COURT.—Let him answer the question.

A. I did not.

Q. (By Mr. CHAPMAN.) Do you know the principle upon which these photometers are designed to operate? A. I do.

Q. State your understanding.

A. The Sugg photometer is—

By the COURT.—The Barr is the standard?

A. Yes, sir. The Sugg photometer is an instrument constructed on the lines of a meter, and designed to register coal gas flowing [441] at a rate of five feet per hour, and making a flame through an

(Testimony of B. S. Pederson.)

Argand burner to the height of three inches. There is an arbitrary fixed point on the meter shown by an indicator—the coal-gas passing at this rate—and at that height of flame as shown by an indicator, the meter running one minute, and arbitrarily marked 16-candle power. In order to distinguish other candle-power, it was necessary for the inventor to use the same gas, flowing at the same rate and the same flame height for one minute, and if the gas was richer—say 17—candle-power—and he had determined on the Barr the point where the indicator stopped, that point would be marked 17. In the case of a poorer gas it would work inversely. More gas of a given candle-power will pass through the same orifice if the candle-power is low than if it is high. That is, for example, coal-gas, it will take more 14 candle-power gas to pass through a meter to make that flame height. If the candle-power is richer it will take less. The flame will be denser, and it will flow through and register a higher candle-power. The index would be inversely to the running of a meter. The more gas you pass through, the lower the candle-power. The less gas, the higher the candle-power shows.

Q. Do all gases of a given candle-power maintain the same height of flame?

A. They do not. There is a marked difference in the different gases.

Q. How does water-gas compare with oil gas with respect to the height of the flame?

A. Water-gas and oil-gas I have not personally

(Testimony of B. S. Pederson.)

determined on the Sugg and on the Barr. But the density of the flame of the water-gas burner is considerably greater than that of the oil-gas burner. In other words, a flame of a certain candle-power from water-gas is not so large as the same flame with [442] oil-gas having the same candle-power. In order to illustrate that—I believe it was also testified here yesterday—in order to get a flame of water-gas to a fixed point, it is necessary to open the orifice or valve more than it is a coal-gas. Consequently in order to get the same flame height with water-gas, you pass more water-gas through the meter. If you are, therefore, passing five feet of oil-gas through a meter and have to open the orifice, you must necessarily pass more water-gas, which would throw the indicator further around and show a lower candle-power than it actually is. Just to what extent that is true on these two gases, I have not made observations on the Barr.

Q. You mean the Barr photometer?

A. Yes, sir. We use the word "Barr."

Q. What would be the effect if you had a Sugg photometer adjusted to measure the candle-power of an oil-gas and mixed gas, or adjusted to measure the candle-power approximately of one or the other or both of those gases, on the accuracy for indicating the candle-power when you put a water-gas in?

A. I say it is impossible to have an accurate reading for the three gases. One of the three gases might be correct. But you mix the gases together or take them separately, they cannot all be correct.

(Testimony of B. S. Pederson.)

Q. If it was regulated to accommodate the flame of an oil-gas and the flame of a mixed gas, would the error be in favor of the water-gas that was passed through it or against it?

A. It would be in favor of the oil-gas.

Q. And against the water-gas?

A. And against the water-gas.

Q. But to just what extent, you are not able to state? A. I am not in a position to say.

Q. Can you state whether or not it would be a substantial [443] error?

A. It would be—well, I won't say how substantial it would be, but from examination of the constituent gases, the water gas having perhaps 27 per cent of carbon monoxide and 17 per cent of methane, whereas the oil-gas has approximately 30 per cent methane and only 11 or 12 per cent monoxide, and these two gases being very close burning, I should judge there is some considerable difference. Whether it would be one or two candle-powers I am not able to say. I know so far as water-gas and coal-gas from my experience with those two gases, they are a matter of four to six candles on a 20 candle-power gas. There would be a difference of that. Another thing, I think if you take a photometer and calibrate it for a 16 candle-power oil-gas it would be necessary to calibrate again for a 17 and 18 and 19, because the proportion would not necessarily be correct for the different candle-powers. It is rather a deep question to go into, because it is an arbitrary standard and it takes absolute tests to de-

(Testimony of B. S. Pederson.)

termine the actual factors.

Q. Should any correction be made for the temperature and pressure at which the gas is passed through?

A. The same as for measurement on a meter.

Q. Do you know whether the Sugg photometer is in general use at this time?

A. It is not at the present time. The principle of the Sugg photometer is such that it is readily adapted to coal-gas, and at the time it was invented there was very little water-gas being made. But since water-gas has become a large factor in the gas manufacture in the United States, it has become obsolete for the reason that it is not adjustable to the two gases. I have in my experience only seen two or three, and they have usually been out in the shop somewhere—put away and not in use. [444]

Q. After the contract was made on July 12, 1909, did you conduct a preliminary experiment prior to changing the apparatus provided for in the contract?

A. I did.

Mr. CHAPMAN.—I believe the witness desires to make a correction. Do you remember what page it is on?

A. I do not. I remember the correction. In my statement yesterday in reference to gases contained in the oil and water-gas, and their action, either through a misunderstanding on the part of the reporter or error, in some way, I stated that monoxide and methane were both close burning gases, whereas the facts are that monoxide is a close burning gas and

(Testimony of B. S. Pederson.)

methane is a free burning gas.

Q. You mean with a long flame?

A. Yes, sir.

Q. How about the luminosity?

A. Methane has very little luminosity, as can be seen in natural gas which is practically all methane. There is hardly any luminosity. Possibly two or three candle-power. Monoxide has no luminosity, but can be enriched. It is a very close burning flame. At the same time, methane burns with a long flame and very little luminosity.

Q. (By Mr. CHAPMAN.) From your knowledge of the operation and results obtained from gas-making machines generally, and from what you know of the dimensions of this set, and the results that were obtained in the course of your experiments with it, will you state what in your opinion that apparatus is capable of producing per day, both as to quantity of gas produced and the fuel consumption?

May I add for the benefit of the witness,—I am referring to the operation under ordinary practical conditions, with fuel made in an ordinary practical manner, and conditions normal in other regards.

[445]

A. Under those conditions, the generator as built there having a grate area that it has, can easily make from three to three and a half million feet a day, or up to the capacity of the superheater and carbureter, which has a rated capacity of about 3,400,-000. So there could be no question in my mind that under normal conditions the apparatus would easily

(Testimony of B. S. Pederson.)

produce over 3,000,000 feet a day.

Q. (By Mr. CHAPMAN.) Have you answered the question with respect to the use of lamp-black fuel properly made?

A. Properly made lamp-black fuel would have the same capacity as coal or coke, as I said before, and has been demonstrated in other machines.

Q. What do you say about the carbureter and superheater?

A. The carbureter and superheater in this machine at the present time had a normal capacity, 3,400,000 cubic feet, figuring on area of the surface in the machine and in accordance with standard practice.

Q. In the manufacture of what kind of gas?

A. Water-gas.

Q. Water-gas of what character?

A. I mean as to marketable or commercial water-gas, from 20 to 24 candle-power, or 18 candle-power if it is desired—any marketable water-gas.

Q. What about its permanency?

A. It would be an absolutely fixed gas. I would not consider an apparatus having capacity unless it could make a fixed gas. It would not do to give that capacity and afterwards the gas go over in a vapor.

Q. What is it in the carbureter that determines this capacity? A. The checker-brick.

Q. The surface? [446]

A. The surface and volume of checker-brick.

(Testimony of B. S. Pederson.)

Cross-examination.

(By Mr. GOUDGE.)

Q. The first interview, I understand, that you had with Mr. Luckenbach with reference to the gas company's contemplated purchase of a water-gas set was in 1906?

A. I said I thought it was in December, but I was not positive. It may have been in January, 1907, or somewhere around that time.

Q. And at that time Mr. Luckenbach told you that they wanted a water-gas set which would use lamp-black fuel, did he? A. Yes.

Q. At that time did you know what he meant by lamp-black? A. Yes.

Q. What was it?

A. Lamp-black fuel, as explained here, which is a by-product from the manufacture of oil gas.

Q. Had you at that time any practical experience with the construction or operation of water-gas sets making water-gas from that by-product? [447]

A. No, sir.

Q. Now, Mr. Luckenbach went on further and told you something of the manner in which the gas company at that time handled their lamp-black, didn't he? A. At that time?

Q. Yes. A. Yes, I think he did.

Q. At that interview, or about the time of those conversations with him—that was in the early days before the contract was made—did you see the briquets that the gas company made from this lamp-black?

(Testimony of B. S. Pederson.)

A. I have seen briquets, but as to identifying whether they were made by this gas company or not, I am not able to say. I have seen them around town, and after that conversation saw them down at the works, and they were identified to me as briquets made by the gas company.

Q. State to the Court, if you please, how the briquets that you saw at that time they were manufactured by the gas company from this lamp-black, differed from the bricks that you have been shown here in the courtroom?

A. I would say that they differed in this way: The briquets that were shown to me down there were compact and solid, and showed no fissures, and would not disintegrate, nor could you break them by rolling them around or throwing them on the floor or knocking them together like that. They showed a tensile strength or crushing strength far superior to anything they ever had afterwards.

Q. How do they differ from these bricks in size and shape?

A. The briquets were smaller. They are probably two and a half inches in diameter and about two inches thick. They are not egg-shaped, but a sort of an oval shape.

Q. The briquets are short cylinders about two inches in diameter and perhaps a little longer. [448]

A. They were not cylinders to my recollection.

Q. Let me finish my description—short cylinders about two or two and a half inches in diameter, with hemispherical ends? A. Yes, sir.

(Testimony of B. S. Pederson.)

Q. And the diameter across the cylinder is about how much?

A. About two and a half or three inches.

Q. And the length of the cylinders?

A. About two inches.

Q. So that at a distance they would perhaps look almost globular or like a globe slightly elongated?

A. A globe slightly compressed.

Q. Well, that would be compressed in one direction or elongated in the other. The diameter of the two axes—

A. They also made some cylindrical bricks. Straight cylinders with flat ends.

Q. And maybe two or two and a half inches in diameter, and about the same length or perhaps a little longer?

A. A little longer, I should judge.

Q. Mr. Luckenbach didn't tell you they were going to furnish these briquets? A. No, sir.

Q. But that they contemplated bricking the lamp-black? A. Bricking it, yes, sir.

Q. At that time they had no bricks on hand?

A. I think not.

Q. At that time you understood they didn't even have a bricking machine?

A. That was my understanding.

Q. At that time had you ever seen any bricks—by bricks as distinguished from briquets, I mean bricks of the [449] size and shape of a common building brick, such as these that are produced—had you ever seen bricks made out of lamp-black?

(Testimony of B. S. Pederson.)

A. No, sir, not that size.

Q. What plant did you know of at that time, if any, that used lamp-black for water-gas making?

A. The San Francisco Gas and Electric Company, and the local plant here.

Q. The Los Angeles Gas and Electric Company?

A. Yes, sir.

Q. Do you know in what form the Los Angeles Gas and Electric Company was using this lamp-black in its water-gas set at that time? We have learned that it didn't have any brick. In what shape did they feed their lamp-black.

A. You didn't learn that they didn't have any brick only as far as I know. They may have had bricks there, but not to my knowledge.

Q. Didn't Mr. Luckenbach tell you that they contemplated getting a bricking machine?

A. For the purpose of making bricks for us. If they had any other brick machine there, they may have had some that they used before.

Q. But if they had, you didn't see any brick or brick machine? A. No, sir.

Q. What do you know about the form in which they used lamp-black at that time in their water-gas set?

A. They used it in lumps, carted from the piles in the yard, without any preparation, as far as I know.

Q. Do you know what size these lumps were?

A. They varied in size.

Q. Do you know what form the San Francisco Gas and Electric [450] Company used this lamp-black?

(Testimony of B. S. Pederson.)

A. Both in briquets and in the raw material. Their process was a little different from what it is down here in handling lamp-black.

Q. When you say raw material—

A. I mean without bricking.

Q. In these lumps?

A. It was not in lumps, but it came more in a mass.

Q. Those are the only two plants that you know of at that time that were making water-gas from lamp-black? A. Yes, sir.

Q. You believe this carbon or lamp-black being compressed into this solid form held its shape by reason of the binder in it. Have you made any physical examination or determination to enable you to testify what it is that binds the carbon particles together when this lamp-black is compressed?

A. Physical examination?

Q. Yes, any scientific physical examination?

A. Yes.

Q. State what that is.

A. It is a tarry and oily substance.

Q. I mean how did you arrive at the opinion that you express that it was a tar that binds the carbon together?

A. Well, I arrived at that personally by trying to press out a brick that had been dried out so that there was no moisture whatever in it, and also driving out a large percentage of the hydrocarbons, whereas a brick that is dried to five per cent will make a good brick. Another determination would be looking at them, and you can see the tarry and oily color of the brick itself.

(Testimony of B. S. Pederson.)

Q. When you say "dried out to five per cent it makes a good brick," are you referring to the raw material dried to [451] five per cent and then bricked? A. Yes, sir.

Q. When you say that makes a good brick, are you basing that on your experience with a hand press?

A. Yes, sir.

Q. Did you also make an experiment with carbon or lamp-black that had been dried to a larger percentage of moisture say ten or fifteen or twenty-five per cent, and compare the kind of bricks that made under similar circumstances? A. Yes, sir.

Q. What makes the brick of greater tensile strength?

A. The one dried to four per cent made a much better brick than any compressed with a higher amount of moisture.

Q. Now, you speak of this hand-press with which you made an experiment. What kind of a machine is it?

A. It is one of these little brick presses that they have in brickyards. I presume to test clays with, or make forms.

Q. How large a brick does it make?

A. It makes a brick about the size of one of those bricks, but in lamp-black, being more compressible than clay, it only makes thin bricks—about two inches in thickness.

Q. What length and breadth?

A. The same length and breadth, but it drives it down tighter.

(Testimony of B. S. Pederson.)

Q. In your experiment you made a brick of the length and breadth of a common building brick or about the length and breadth of these bricks here, but only— A. About half the thickness.

Q. I show you a slab of what appears to be carbon (this slab handed Mr. Goudge by defendant's counsel) and ask you if that is one of the bricks made in the hand-press? [452]

A. That is one of the bricks.

Q. Did you make that? A. Yes, sir.

Q. Is that made with lamp-black?

A. Yes, sir, containing four and one-tenth per cent water.

Q. That is, the lamp-black did before being made into the brick? A. Yes, sir.

Q. What determination and in what manner was the determination of moisture content of this lamp-black made?

A. We took a sample and weighed it with the moisture in, and baked it about five hours at 195 to 200 degrees temperature, and then weighed it back—let it cook and weighed it back.

Q. Who did that? A. I did it.

Q. Where did you get the lamp-black from which this brick was made?

A. I made that brick in San Jose.

Q. And the lamp-black came from what?

A. An oil-machine operated at that point.

Q. The San Jose Gas Works? A. Yes, sir.

Q. When you got the crude lamp-black was it in powder form or brick form or lump form or what shape?

(Testimony of B. S. Pederson.)

A. The crude lamp-black. We took it—probably containing 60 per cent moisture, and we put it on a pan and spread it out on a connection between the generator and carbureter to dry, and let it dry five or six hours, and took it off and tested it for moisture, and we took it right out to the press and poured it into the press.

Q. Did you make any tar or hydrocarbon determination of [453] this sample of lamp-black?

A. No, sir.

Q. What pressure is exerted in this press that you made the sample in? A. I can't say.

Q. Have you here with you any sample made in the same press with the same lamp-black, containing a larger percentage of moisture at the time it was compressed?

A. I don't think I have it here. I have samples, but not here.

Q. After you spread this carbon out and dried it, did you then pulverize it?

A. We stirred it up and worked it into the mould. I didn't use any mortar or anything like that to pulverize it in. I stirred it up and filled the mould and packed it in the mould with my hand.

Q. Did you make any tensile strength determination?

A. I have made no determination whatever. I took the brick just as it came out of the machine, and I wanted to determine for my own knowledge just what it would do.

Q. Have you seen any other lamp-black bricking

(Testimony of B. S. Pederson.)

machine operating except the one of the Los Angeles Gas and Electric Company's works? A. Yes, sir.

Q. Where? A. In San Francisco.

Q. Did you ever see a commercial brick machine?

A. Yes, sir.

Q. Is it a brick machine or a briquet machine?

A. It is a combination of both. It makes a briquet probably four inches in diameter, and it is a continuous process something like a sausage machine. [454]

Q. Does it make brick also? A. No, sir.

Q. Then, the Los Angeles press is the only brick-making machine that you have ever seen in operation? A. It is.

Q. It is not true in the San Francisco machine nor the Los Angeles machine that the moulds are packed in by hand? A. Not to my knowledge.

Q. Now, speaking of the changes that were made in this water-gas set, substantially the change that was made in the generator was a making over of the generator? That is, it was equivalent to a substitution of twin generators or two generators for the one previously in use? A. Yes, sir.

Q. And this dividing wall did not exist formerly?

A. It did not.

Q. In the previous experiments that you made in the machine, before this twin generator was substituted, you were using these carbon bricks as fuel, were you not? A. Yes.

Q. Did you find at that time in those previous experiments that a great deal of the fine carbon went over into the carbureter?

(Testimony of B. S. Pederson.)

A. I found considerable went over, yes.

Q. And that was the reason why this supplemental contract in the changes contemplated to be made before a final test should be made of the machine, it was provided that among the changes to be made should be a provision of ample means for the collection and easy removal of dust and fine carbon carried from the generator to the carbureter, was it not?

A. I think so.

Q. That is, your experience with the apparatus showed you that it was necessary to make some other and further provision [455] for the removal of this dust and fine carbon that being carried over into the carbureter?

A. It was necessary to make some provision for that purpose. That was the intention of that contract, I should imagine.

Q. Didn't you have any provision at all before that for the arrest of the carbon and dust carried over into the carbureter? A. Yes.

Q. But it turned out not to be adequate in practice?

A. It was not satisfactory exactly, as it was.

Q. In the old experiment and with the former machine, did the carbureter collect dust, and was it obstructed?

A. Not to any such extent as during the last test.

Q. But still sufficiently so that the means that you then had provided for the removal of the fine carbon, was not satisfactory?

A. We thought that the provisions made would be satisfactory, and in complaining about the fine stuff,

(Testimony of B. S. Pederson.)

I presumed that we should take care of it as far as we could. If we have, for example, a fuel that was in accordance with the contract, we should be able to take care of the fuel. But it don't mean that we should be able to take care of it under abnormal conditions.

Q. But it did mean that you should provide means for the easy removal of fine dust and carbon at that time and in the old machine they were not ample or satisfactory? A. Yes.

Q. When this supplemental contract was drawn and entered into, the provisions of it were discussed and considered by you as agent of The Western Gas Construction Company, were they not? [456]

A. These contracts were largely carried on by correspondence. I was not here all the time. I think the contract was submitted to Fort Wayne—some of them—and backwards and forwards. And at that time I was not all the time here, although I was a part of the time.

Q. Isn't it true that this supplemental contract of the 12th of July, 1909, was drafted here in Los Angeles in your office or in Mr. Trippet's office when you were present?

A. I don't know where it was drafted. I am under the impression it was drafted in the gas company's office, but I am not certain.

Q. Well, you have described what changes you made in the generator, thus converting the generator into a twin generator, and spending more work and labor, as you said, than in the original work of con-

(Testimony of B. S. Pederson.)

structing it. What changes were made in the carbureter?

A. The connection between the carbureter and the generator we made a change in.

Q. What kind of a change?

A. We put in that valve there called a hot valve, and that connection from the pipe leading down into the carbureter again. There is a pipe leading into the generator—

Q. You said carbureter.

A. I should say generator. Which in itself is an additional receptacle for dust and lamp-black blown over.

Q. This was a change in the design to take care of the dust and fine carbon blown over?

A. It would do that, but it was not ordinarily designed for it.

Q. What is it for?

A. It is a run-down connection.

Q. When the gas generated in the generator passes through this connection and by this hot valve on its way to the carbureter, [457] is there any valve on this? A. No, that is open.

Q. What passes down this connection when the machine is being operated and this valve is open?

A. Only a certain amount of carbon would naturally precipitate there and fall into that pipe.

Q. And then where would that lead?

A. Into the generator below the grate-bars.

Q. Into what would be the ash pit? A. Yes, sir.

Q. What other change was made in the carbureter?

(Testimony of B. S. Pederson.)

A. I don't remember whether the oil-injectors were changed at that time or not, but I think they were, and I believe we re-bricked the carbureter.

Q. (The COURT.) Is that where the oil goes into the apparatus?

A. Yes, sir.

Q. That is, sprayed in there? A. Yes, sir.

Q. (By Mr. GOUDGE.) Sprayed in up here?

A. Yes, sir.

Q. And there are several of these nozzles?

A. Yes, sir, eight of them at different points, the idea being to spray toward the center and meeting there.

Q. This place in the carbureter here is also designed for catching the fine carbon carried over from the generator?

A. It is not designed for that. It is designed to catch ashes from any generator fuel. Here the ashes were carbon.

Q. What besides this down-draft pipe—what other means did you provide in the new set for the collection and easy removal of dust and fine carbon carried from the generator [458] to the carbureter that had not been provided in the old set?

A. None. The only thing we did in that respect was providing for the removal of the dust, whereas before it went into the generator—

Q. But I am calling your attention, Mr. Pederson, to a provision of means, if any were provided, for the collection and removal of dust and fine carbon which was carried from the generator to the car-

(Testimony of B. S. Pederson.)

bureter. We have learned that in the operation of the old set in practice it developed that dust and fine carbon was carried from the generator to the carbureter, and among the changes that you desired to make and were provided to be made in your supplemental contract before the new test or final test, was a change which would provide for the easy removal of fine carbon which was carried over. Now, you said this down-draft pipe would in a measure have the effect of catching some of this fine carbon. Was there any change made in the carbureter?

A. No, sir.

Q. Now, this down-draft pipe, the primary purpose of that was not to collect the fine dust and carbon? A. No, sir.

Q. Was there any down-draft pipe in the first set?

A. Not in a location so as to act that way. There was a down-draft pipe that came down on the side of the apparatus.

Q. If this pipe, which we call the down-draft pipe, were to accumulate carbon so as to fill with carbon down at the end, it could no longer act as a down-draft pipe, could it?

A. Why not? Do you ask the question, or do you make the statement?

Q. No, I said, "Could it"?

A. It could, certainly.

Q. Do you mean that it could while it was filled with carbon? [459]

A. It could. But when it was used as a down-run pipe, the valve is open down below, and up above the

(Testimony of B. S. Pederson.)

valve is closed, leaving the opening clear.

Q. I am assuming when the generators are in operation and this valve is open, the gas which passes from the connection toward the carbureter into the carbureter, at that time fine carbon would fall down in this pipe? A. Yes, sir.

Q. And it would go on until the pipe was full in the bottom part with fine carbon? A. Yes, sir.

Q. Now, then, shut down your valve here, and open your valve here, would there be any draft through the pipe?

A. The carbon itself would naturally fall into the generator, and the valve being open, the gas would go the other way.

Q. So this would be automatically a self-cleaning pipe?

A. Yes, sir. Every time the valve is opened the carbon would fall down. That carbon had a consistency of almost quicksand. If we opened that door in the lower part of the chamber, the entire mass would run out like sand, and out of a pipe like that it would have a similar action into the bottom of the generator. [460]

Q. The supplemental contract provided, as we developed yesterday, among the changes that were desired to be made in the apparatus in order that it might be submitted to the new test, a provision for the installation of a new generator or generators, the provision of ample means for the collection and easy removal of dust and fine carbon carried from the generator to the carbureter; and, third, the provisions

(Testimony of B. S. Pederson.)

for ample and satisfactory means for scrubbing and condensing of gas made. What alterations were actually made in the set to answer that call and provide ample and satisfactory means for scrubbing and condensing gas made?

A. The changes made in the scrubber consisted in putting in larger water-sprays in the top.

Q. Anything else in the scrubber?

A. I am not certain. Mr. White, I think, changed the blocks. He put in some wooden blocks. I am not positive. Mr. White can testify to that. In the condenser the only change made was made by the gas company. It was found that the water that they supplied us then was not sufficient to properly condense the gas and bring it to the temperature required. And they placed a larger water outlet pipe and also an inlet pipe. I am not sure about the inlet pipe, but they provided a larger outlet pipe to carry away the water.

Q. Was that done at your request or suggestion?

A. Yes, sir; it was part of their work, but it brought about the condition that we desired.

Q. That is, it was to be done by them if you requested it? A. Yes, sir.

Q. And the changes were made at your instance and request? A. Yes, sir.

Q. Mr. Pederson, you have stated that the plants with [461] which you had some acquaintance—the only plants with which you had any acquaintance—which used carbon or lamp-black for the production of water-gas, were in San Francisco and Los

(Testimony of B. S. Pederson.)

Angeles, and you described the manner that you were informed and advised in which this lamp-black was used in those two plants, namely, that it was fed into the generators in lumps—rough lumps—derived from the mass of lamp-black which had been sun-dried or air-dried. Is that right?

A. Partly. I also said that they mixed briquets with these lumps in San Francisco.

Q. Did you ever see the work of supplying the lamp-black in the generators in San Francisco being carried on, at the time or prior to the making of the first contract with the Los Angeles Gas and Electric Company?

A. Yes, I would say I had. I was around the works there.

Q. Had you seen the operation of feeding lamp-black into the water-gas set of the Los Angeles Gas and Electric Corporation plant at that time? That is, at the time of the execution of the first contract?

A. Yes, sir.

Q. So that you knew in what manner the carbon was handled not only the shape but the manner in which it was fed into the generators?

A. Yes, sir.

Q. How was that done in San Francisco?

A. In San Francisco it was taken from the press and piled up—the bricks and mass together—and then taken from this pile and fed into the generator, by wheeling it in wagons to the operating room and there elevating it on an elevator, and wheeled over to the machine dumped through the bottom door in the

(Testimony of B. S. Pederson.)

wagon that they hauled it in. [462]

Q. Just tipped or dumped?

A. No, just a lid dropped and it would fall down. The material would slide into the generator from this cone-shaped barrel. They also had barrels that worked with a tipping arrangement, something in the shape of a teakettle with a large spout, which swung on the wheels so that it would readily tip, and they tipped that over and the material would go into the generator.

Q. This was in San Francisco? A. Yes, sir.

Q. And at or about the time of the execution of this first contract? A. Yes, sir.

Q. You spoke just now of their handling the bricks in that manner, but you stated a while ago that they did not have bricks, but had briquets.

A. Briquets. I am mixing those terms. They had briquets about four inches in diameter.

Q. And they also had rough lumps?

A. Yes, sir; lumps. But not so large as to prevent their going down through the chute.

Q. How large was the aperture of the chute?

A. About 18 inches in diameter.

Q. Of course, if they went down through the chute, they had to be small enough to go into it?

A. Yes.

Q. Were these lumps handled in the same way in these barrels or kettle arrangement that you have described? A. Yes, sir.

Q. Was anything done to reduce those lumps to a uniform size, so that they were all within an inch

(Testimony of B. S. Pederson.)

or two of one another? A. Not that I know of.

[463]

Q. You do know, if you saw it?

A. I did not see them reduce them or break them up to get them to that size.

Q. Did you know they were not of a uniform size?

A. They were not of a uniform size.

Q. How was it at the Los Angeles Gas and Electric Company plant? What shape was the carbon brought to the generators in that was put in the generator?

A. Brought in the wheelbarrows or wagons, and wheeled up to the floor and shoveled in.

Q. Was it shoveled or forked?

A. That I would not state positively. I don't recollect. It may have been forked or it may have been shoveled.

Q. And this carbon, referring to the Los Angeles Gas and Electric Company's plant, at the time of the execution of this contract or prior thereto, that was in lumps? A. Yes, sir.

Q. How about those lumps? Were they irregular in size? A. No.

Q. Was there anything to grade them or bring them to uniform size? A. I think not.

Q. I asked you a question just now, and I think you misunderstood me. Were they irregular in size?

A. They were.

Q. Have you ever seen anthracite coal fed into gas generators? A. I have.

Q. In the practice of gas manufacturing from an-

(Testimony of B. S. Pederson.)

thracite coal, is it usual and customary within your experience and observation to grade the coal and reduce the lumps to a uniform size before putting them in the generator?

A. If you mean by uniform size that each lump is exactly [464] the size and shape of the other, I would say no. But they do grade the coal. Anthracite is graded in probably four or five grades, peacoal, nutcoal and eggcoal, and I don't remember what the next size is, but they have terms to designate each general size. These lumps may vary from two inches to three or four inches in diameter, but they are a grade of coal—I think they are screened at the mine, and each size goes through a certain mesh and designated by that term.

Q. But no grading is done at the gas-works?

A. No. In the matter of coke, however, there is quite frequently grading done. Coke comes in different sizes, and they screen the coke to get out what they call the breeze, in that way they reduce the coke to uniform lumps, within a reasonable limit.

Q. So that according to your observation and experience in the case of coal and coke, the material is usually obtained and delivered into the generators of a tolerably uniform size, but in the case of rough carbon there is not any grading of the lumps, and they are delivered as they come?

A. That has been the custom.

Q. Now, Mr. Pederson, you speak of the necessity or the practice of closing down water-gas generators at certain periods. Do you know how often the

(Testimony of B. S. Pederson.)

water-gas sets in use at San Francisco at the time of the execution either of the first contract with the Los Angeles Gas and Electric Company or at the time of the execution of the supplemental contract with the Los Angeles Gas and Electric Corporation, was?

A. I don't know positively. No. In fact, I cannot say that I know at all.

Q. Isn't it true, Mr. Pederson, that the only knowledge you have of any practice existing anywhere of any closing down of water-gas sets every seven days, is your knowledge of [465] the fact that the Los Angeles Gas and Electric Company made a practice of closing its set down once in seven days?

A. This is the only plant where water-gas was made under those conditions, except the San Francisco plant.

Q. What do you mean by "those conditions"?

A. With lamp-black conditions. And consequently this was the only plant that I could refer to especially.

Q. As to the San Francisco plant?

A. I do know this: In San Francisco they are not running continuously. They have from two to four generators going there, and they are not running continuously. Usually one is shut down and then the other. I do not know how often they shut down or what their exact periods are.

Q. Whether it is once in four days or once a week or ten days—

A. I would not be able to say that.

(Testimony of B. S. Pederson.)

Q. Now, you explained the reason for the necessity for shutting down such a set as this, and, as I understood your testimony, the principal reason was the condition that the carbureter would get into; that, for example, when the checker-brick in the carbureter became coated with unconsumed carbon or with the residuum of asphaltum, or coated so as to become unclean anyway, reducing the surface of the brick work, that would depreciate the efficiency of the machine; and in the end, if that condition continued progressively, it would choke the carbureter so as to render it necessary to stop and clean the carbureter. Is that correct in a rough general way?

A. Yes, sir.

Q. Now, then, the need of closing down the machine in order to burn it out or clean it at any particular interval of time, varies with or relates to the condition of the carbureter [466] from time to time? For instance if the carbureter remained clean, it would not be necessary to close the machine down?

A. That might be good. Depending also on the condition of the fuel. If your fuel becomes so absolutely impenetrable that you cannot get the necessary combustion, you might have to close down to build up a new fire in the generator.

Q. But this need or requirement or expediency of closing down one day in seven, that you refer to, is so that the carbureter may be cleaned and restored to an efficient condition?

A. Yes, sir; that is the object of closing down the

(Testimony of B. S. Pederson.)

carbureter or machine under those conditions.

Q. Now, you spoke of spraying, or explained a part of the system of manufacturing water-gas in such set as this—that it involved the spraying of oil into the carbureter, and that that is where the enrichment takes place, and you stated in part of your testimony that if too much oil was sprayed in the temperature of the carbureter would be lower, and there would be a probability of the oil being deposited on the checker-brick, or if the temperature was not high enough it might be deposited on the brick, and it would become foul and possibly choked.

A. Yes; there is a possibility of that.

Q. So that with the ideal condition to bring the machine to its best condition, the object you have is to get just enough oil in the carbureter, having in mind the character and quantity of the oil as well as the temperature of the carbureter—just enough so that it would go on operating without fouling?

A. That would be the ideal condition.

Q. And the length of time that the carbureter would run [467] without requiring to be cleaned would depend upon how closely one could approach that ideal condition? A. Exactly.

Q. And, as you have testified, it is not only theoretically possible, but actually practicable and observed in experience that a set would run for three or four weeks or could run for three or four weeks in actual practice without need of closing it down?

A. It could, if conditions were normal.

Q. Another factor enters into the case, does it not,

(Testimony of B. S. Pederson.)

that the larger your carbureter, and the margin between the carbureter's final efficiency, and the work it is called upon to do, the longer it will stay in efficient operation? That is, if the machine is worked below its maximum capacity, the carbureter would stay in condition longer than if it was forced to its absolute maximum capacity? A. Yes, sir.

Q. In speaking of balancing the set or any set, using the expression you have frequently used, one of the meanings of the word "balancing" is bringing the set into such operation that everything may go smoothly and then fouling may be avoided as near as possible and, if possible, avoided entirely?

A. That is the idea of balancing the machine; getting the proper efficiency out of it.

Q. And one of the factors of efficiency, as shown by the machine, would be its continued operation without fouling? A. It would.

Q. As you have used it in your direct testimony, the word "efficiency" means quantity of product of a desired quality, usually, does it not? That is, you measure the efficiency by the quantity of the required gas produced?

A. Quantity, yes, with economical results desired. I [468] would not call a machine efficient if it produced the quantity and did not do it with material required to economically produce that quantity.

Q. So that the efficiency is made up of the quantity of the product of the desired quality, within the limits of economy prescribed? A. Yes.

Q. Now, you said that with this set, at least I un-

(Testimony of B. S. Pederson.)

derstood you to say, if it had not been for the carrying over of the fine carbon and dust and the resulting difficulties from that that you could have operated the set continuously without shutting it down, though you doubted under that continuous operation, whether you have gotten efficiency. You said something like that.

A. For a term we would naturally get efficiency.

Q. I don't mean operating continuously without limit.

A. When you say "continuously" you may mean nine months or a year. But operating continuously for a month we would have efficiency. But I do not want to be understood that it would be continuous.

Q. I was going to invite you to say what you meant by "continuously."

A. I mean within a reasonable limit of time.

Q. You would say, perhaps, a month continuously, or thirty consecutive days? A. Yes, sir.

Q. Very well. But you said though that might have been done, you hardly thought, or you doubted whether you would have gotten efficiency. What did you mean by that?

A. That towards the latter end of the run it would naturally—the brick would become glazed. The action of the heat on the brick would make them less porous and not so refractory [469] to heat, and consequently you would not have the full efficiency of your machine. While a brick is clean and porous, it naturally has more refractory powers and can be used longer.

(Testimony of B. S. Pederson.)

Q. Now, using the word in the sense that you use it, do you mean that towards the end of the thirty days you would expect the machine to show a falling off in the amount of gas produced per thousand pounds of carbon?

A. No, the generator would have nothing to do with it. If the fuel was ideal, there would be no change and the generator could run for a year. That is, if the clinkers do not accumulate.

Q. Where would the falling off of the efficiency in the thirty days occur?

A. It would be an oil efficiency.

Q. You would be using more oil?

A. More oil for a certain candle-gas.

Q. But you think there would have been no change in the economy of fuel?

A. No, I think that would remain substantially the same.

Q. You came down here after the commencement of this final test, about the 14th—

The COURT.—The 12th he got here.

A. The 12th.

Q. (By Mr. GOUDGE.) I beg your pardon. That was the same error I made yesterday. What time of the day was it when you first saw the set in operation on the 12th.

A. I cannot exactly say. Some time before noon. I do not remember whether the train was exactly on time. I came down on the Owl, and it may have been an hour or two late. I don't remember. But I came down to the works just as soon as I located myself at the hotel. [470]

(Testimony of B. S. Pederson.)

Q. It was somewhere near mid-day?

A. I think so.

Q. Now, then, you said that when you saw the machine, or when you first got here, or very soon thereafter, the machine in its operation to you did not seem to be properly balanced. When did that appearance present itself to you? When did you arrive at that conclusion or opinion?

A. Shortly after I arrived at the works. I looked over the report of the preceding day or two days and saw the action of the machine. It is difficult to describe exactly how you could tell those things on a machine. It may have been in the manner in which the blast was going through the machine and in the general operation of it; dust accumulating there; the looks of the fire. But it was apparent to me that the machine was not doing itself justice at the time.

Q. And when you say "at the time" you refer to the afternoon of the 12th? A. Yes, sir.

Q. Before arriving at that opinion, you looked at the record of the make of the machine during the previous two days? A. Yes, sir.

Q. Do you remember what that make was?

A. I think it was somewhere in the neighborhood of 2,700,000 on the first day, and 2,500,000 on the second day. I do not remember the exact figures.

Q. Let me suggest the quantities to you—you have a memorandum of it?

A. I think I have a memorandum of it. 2,422,000 is my memorandum.

Q. That is the second day. And on the 12th?

(Testimony of B. S. Pederson.)

A. On the 12th, I didn't have that. We wouldn't get [471] that till next morning.

Q. But you did have a record every hour of the make, didn't you?

A. After arriving there?

Q. No. There were meter readings taken hourly, and you could ascertain?

A. I think not. I wasn't there. Mr. White was only on during the day, and if I remember correctly the gas company only took two readings, one at 6 o'clock in the evening and one at 6 o'clock in the morning. It was after I arrived that I took hourly readings.

Q. I ask you that to ascertain whether or not on the 12th in the afternoon, when you formed this opinion about the want of balance of the machine, you ascertained how the machine was running right then, or during that forenoon?

A. No, there wouldn't be any opportunity of doing that. It would be merely a guess. At any rate you wouldn't want to change conditions each hour. You would have to run an hour or two or three hours to see whether it was just a temporary trouble that might work itself off. It is a pretty large machine. And if we were to switch around every hour because we happened to make a little more or a little less gas, we would do nothing else but switching operations.

Q. I was not suggesting that. But I want to know whether the falling off in the amount of gas produced by the machine on the second day of its

(Testimony of B. S. Pederson.)

operation was not one of the things that impressed you with the opinion that the apparatus was not properly balanced?

A. Oh, yes. That impressed me very much, because in ordinary operation it should increase. That is, with coal or coke.

Q. And, of course, from what you said, you have not the [472] previous experience to know whether with lamp-black there should be such a difference as this and there should be a falling off instead of an increase.

A. I figured that with lamp-black or proper fuel we should have an increase in this machine, the same as in the other. There is no logical reason why we should not, outside of the fact that the machine was not in proper condition and was not properly balanced.

Q. Did you make any changes in the operation of the machine during that day—the 12th—or order any to be made?

A. I did not according to my recollection.

Q. What was the make of the machine for that day, ending at 6 o'clock in the morning of the 13th?

A. My memorandum says 2,247,000.

Q. And on the next day did you make any change in the operation of the machine?

A. I do not remember exactly. I would have to look that up on the operating report.

Q. Even if you made any changes, they would be just in the matter of furnishing fuel or oil or steam or blast?

(Testimony of B. S. Pederson.)

A. It would be somewhere in the handling of the apparatus. That is the only condition that we could control at that time.

Q. It was no structural change in the apparatus?

A. No, sir.

Q. What was the make with the machine on that day—on the 13th? A. 1,935,000.

Q. And on the next morning the 14th, you closed down? A. Yes, sir.

Q. Can you give the reason why a machine for the making of gas should produce more gas on the second day than the first day of its operation?

A. The reason for that is that on the first day we usually [473] feel our way. We do not know, unless by some accident you guess at the conditions, you would not know the exact quantity of steam to put in the generator, or of air, or the exact quantity of oil to take care of that. Knowing the first day what you have done, and seeing the machine in good condition, you increase it up to the point where you feel that you can take it the next day. For example, putting in a certain amount of steam you see it is making a certain amount of gas per hour or per run, which we could ascertain, and finding that the carbureter takes proper care of this gas and knowing at the same time that you are not up to the rated capacity of the machine, you increase the steam probably a small quantity the next day, or you may run along the same way for another day to see if this condition is true before making changes, and then you increase the steam and generate more gas

(Testimony of B. S. Pederson.)

and put in more oil to take care of this gas.

Q. Now, then, the reason why you expect a machine to produce more the second day than the first is that you have to go through these balancing operations and get the machine just so? A. Exactly.

Q. And after reaching that point where you get near the rated capacity of the machine, from that time on the production should be approximately constant? A. Yes, sir.

Q. Very well. Do you know when this machine was started up prior to the 10th of March, 1910, and for how long it had been continuously run up to the 10th of March, when the test began?

A. I wouldn't be able to testify to that. I wasn't here at the last time it was operated, if my recollection serves me. We started up some time in January and ran two or three days. [474]

Q. I mean continuous run prior to March 10th?

A. I don't remember whether we had any. In fact, I was not here at that time. I may want to correct that later on if I find by correspondence that I was here. But my recollection is at the present time that I was not.

Q. You got here and saw its operation during this test the first time on March 12th, and you spoke of this falling off in the production as one of the things that impressed you with the opinion that the machine was not balanced, because among other things, instead of falling off there ought to be an increase on the second day. Did you believe at that time that the 11th of March was the second day's oper-

(Testimony of B. S. Pederson.)

ation of the plant? Did you believe it had been started up on March 10th in the beginning of this continuous run?

A. That was my understanding.

Q. That it was fired up on March 10th?

A. No, no. I said it had been fired up a day or so ahead of the time.

Q. And run continuously?

A. No, I think they were just building up the fire and getting it in condition to start to run. It may have run partly on the day previous or made some runs, but I don't know just to what extent. It was a very short time, I am sure. [475]

Q. I understood you a little while ago to say that you did not have any means of knowing what the run was from hour to hour?

A. I didn't say that.

Q. In connection with your testimony as to the condition existing on the 12th.

A. I said I had no means of knowing then because the gas company read the meter twice a day, whereas later on when I was operating I took hourly readings.

Q. You had not begun that on the 12th?

A. No, sir. You were asking then with reference to what happened on the 10th and the 11th.

Q. I was inquiring as to the conditions on the 12th, and whether you knew there was a falling off, and you said the meter was only read twice a day, and you wouldn't know till next day?

A. That is true.

(Testimony of B. S. Pederson.)

Q. Then you did not read the meter every hour on the 12th? A. My reports show—

Q. Will you produce the reports?

A. I am not positive about the 12th, but I may have started in at 6 o'clock in the evening and read the meter from that time till next morning. But at the time I was there on the 12th, we had not done it.

Q. Please produce your report for that evening that you referred to. A. The operating report?

Q. Yes, sir. State what this is.

A. It is the night operating sheet used in connection with the water-gas set.

Q. This gas-set? And the night of what day?

[476] A. Of the 12th.

Q. That is the day you got here? A. Yes, sir.

Q. And by night you meant 6 o'clock in the evening till 6 in the morning?

A. To 6 A. M. on the 13th.

Q. And you made such a report for each night of the test? A. Yes, sir.

Q. Would that show what the meter read and what the production of gas was? A. No, sir.

Q. For no period of time? A. No, sir.

Q. It does not show the amount of gas made?

A. No.

Q. Is there an omission from this report or what?

A. The operating report makes a record here of each run, the amount of gas. In some gas works the holder is so arranged that it has a pulley into the operating room which would show each run—a pulley with an index—showing each run of the machine

(Testimony of B. S. Pederson.)

on that index by the elevation or depression of the holder. The holder fills and goes up and it would indicate on this indicator. That is supposed to be a guide for the operator. But we did not use it there.

Q. You did not note on your report the amount of gas made? A. No, sir.

Q. Nor each day?

A. No, sir. That was personal notes that I took for my own benefit. I don't think I even—I may have told the operator that he was making so much this hour and so much that hour, but it was not for a permanent record.

Q. So that this memorandum or night report does not show [477] whether you consulted the meter or knew what the quantity made from hour to hour was or not? A. It doesn't show that.

Q. And you are not able to say whether you did or not? A. On that first day?

Q. Or that first night?

A. Yes, I am positive. But as to swearing absolutely I wouldn't care to do that. But I started in with the idea of doing that and keeping a close track and seeing how we ran each hour, and I know that I did it the other nights.

Q. On this report the candle-power is entered?

A. Yes, sir.

Q. That is the candle-power as reported by Mr. Robinson?

A. Yes, and the report is signed by the operator.

Q. Did you make any memorandum other than this report or apart from this report of the amount

(Testimony of B. S. Pederson.)
of make of gas?

A. Just a temporary memorandum, so that I would get it from hour to hour. I put it down on a slip of paper through the day, and I may have handed it over to Mr. White in the morning, but I don't remember whether I did or not.

Q. Have you those memoranda?

A. No, I have not.

Q. Was there any permanent memorandum or record made by you or under your direction of the make?

A. No, sir. I was on duty and I would give him the data and he would make up the report from his record.

Q. And this Sugg photometer was at the time of the test—it was the same machine that had been used there prior to the test?

A. Yes, I should say it was.

Q. When had you seen it before?

A. I had seen it numerous times when I was around the works. [478]

Q. It was the regular photometer installed there?

A. It was the photometer they had there. I did not go into the question of how it was arranged, naturally assuming that they would have a standard apparatus in the works.

Q. And this one that was used in the test was the same one that they had there?

A. I assumed it to be, yes. I do not believe there was any change made.

Q. I call your attention to the letter written by

(Testimony of B. S. Pederson.)

you June 16, 1908, addressed to the Los Angeles Gas and Electric Company, Exhibit "B." You wrote that letter, I believe, did you not? A. Yes.

Q. And this letter contains the statement "The photometer is accurate and correct." A. Yes, sir.

Q. You were at that time satisfied that it was correct?

A. I was satisfied from the statements made by the chemist and foreman that it was correct. [479]

Q. It is possible, is it not, to blow over more or less fine carbon by the strength of the air blast used? That is, for the purpose of illustration, if one used an extraordinarily and excessively strong air blast in the generator, one would blow over material and carbon that otherwise would not pass over?

A. Naturally. That is the only way you would get it over.

Q. And one of the balancing operations, particularly in a set designated to make gas from lamp-black, would be to get your blast strong enough to cause the air to permeate or penetrate the fuel, and yet not so strong as to blow the stuff over to the carbureter? A. Yes, sir.

Q. Now, from the fact that on the 14th of March, the carbureter was choked, you concluded that it could not have been clean when it started, didn't you? A. Yes, sir.

Q. Were you assuming when you said that, that it started on the 10th of March? A. Yes, sir.

Q. You don't know what the fact is, the fact whether it did not start many days before that?

(Testimony of B. S. Pederson.)

A. Only from the records kept by Mr. White. I think he has a record showing that he put the fire in there on the 8th or 9th. [480]

Q. That is what I wanted to get at. You were informed and you did believe that it had been actually fired and started in operation before the 10th.

A. Yes, sir.

Q. Bearing that in mind, would the condition on the 14th, if the set had actually started up several days before the test—was the condition on the 14th such that even then you believed that the carbureter was not clean when the set was started? Or do you mean simply that it was not clean on the 10th of March? A. It was not clean when it started.

Q. Even though it was started on the 7th or 8th of March? A. Two or three days before.

Q. To give a set of this kind a proper demonstration and get the proper results, it ought to be clean when it begins, ought it not? A. I think so.

Q. Speaking, now, of the fuel that was furnished, you saw the fuel, as it was being delivered? Did you see it over in the piles, the piles from which it was brought during this test?

A. Did I see it in the piles?

Q. Yes. A. I did at times.

Q. During the test? A. During the test.

Q. In the previous experiments with this set or the set that preceded it, have you seen these piles of brick? A. These same piles?

Q. Yes.

A. That I could not say, whether they were the

(Testimony of B. S. Pederson.)

same piles. I have seen or did see at different times different [481] piles of brick.

Q. In the same place?

A. No, I don't think they were in the same place. I think the piles there earlier were in another yard, but that is a matter that I cannot positively state.

Q. But were they the same kind of bricks?

A. So far as shape were concerned, do you mean?

Q. Yes. A. Yes.

Q. Have you ever seen any other bricks made of lamp-black except the bricks made by—I mean commercially made brick—bricks in large quantities, turned out by a commercial press—other than the bricks made by the Los Angeles Gas and Electric Company or the Los Angeles Gas and Electric Corporation? A. No.

Q. Do you know of any lamp-black brick making machine in actual use except the machine or machines used by the Los Angeles Gas & Electric Company or the Los Angeles Gas & Electric Corporation?

A. I cannot state as to that. I know there—you mean bricked to this particular shape?

Q. Yes, bricks as distinguished from briquets. When I say bricks I mean the bricks like these produced here, which are about in the shape of a common building brick. A. No, I don't know.

Q. At the time the company was furnishing this fuel to you during this test from March 10 to March 30, do you know whether they had any better bricks than those they furnished you—better in the sense

(Testimony of B. S. Pederson.)

of having greater tensile strength?

A. I cannot say as to that, because, as I said before, I was on at night and did not go over much and around to examine. I kept close to the operating floor and my work. [482]

Q. Do you know whether or not these bricks that were furnished you during the test had or had not been sun-dried or air-dried?

A. To my own knowledge I don't know.

Q. Do you remember seeing the piles of brick in the company's yard, such brick as has been furnished to you, and noticing that they were covered over with corrugated iron or tarpaulin or any means taken to protect them from the weather?

A. I understood they were.

Q. You were here in January of that same year?

A. A short time; yes.

Q. You understand, do you not, that the possibility of drying brick in the air to a certain degree of dryness or a certain percentage of moisture depends upon the humidity of the atmosphere, and that you cannot get the bricks in the air any drier than the air itself is?

A. Yes, I understand that.

Q. Did you ever make any objection to any officer or representative of the Los Angeles Gas and Electric Corporation to the drying of these bricks by artificial heat?

A. Not directly to the men around there. I made complaints about it, but I would not call it an official objection. Mr. White was practically in charge of

(Testimony of B. S. Pederson.)

all the negotiations carried on between the companies, and he would act on my recommendation. But he principally carried on these negotiations.

Q. You also said in conversation with Mr. Luckenbach on the subject of the company's having in contemplation the purchase and use of a Cummer dryer for drying lamp-lack. A. Yes, sir.

Q. You know now that the Cummer dryer cannot be used to dry brick? [483]

A. They did not intend it to dry brick with.

Q. Did you understand at that time that it was used for drying brick? A. No, sir.

Q. Did you have any conversation with Mr. Creighton at the gas-works with reference to the company's ability to furnish brick to be used in this generator, with respect to their being the kind of brick that you were entitled to receive?

A. At what time?

Q. When you first came, during the test?

A. No, sir.

Q. So, on the 12th you arrived. On that day did you have any conversation with Mr. Creighton about the bricks at all? A. I did not.

Q. You did not even complain of the bricks on that day? A. I did not, not to my recollection.

A. Do you remember on the day you arrived at Los Angeles, on the 12th, being over in the yard where these bricks were, and conversing with Mr. Creighton respecting them in the presence of Mr. Creighton's men who were handling the brick, and asking him what they were doing with the bricks,

(Testimony of B. S. Pederson.)

and Mr. Creighton saying something to this effect: "We are repiling them so as to dry them out. We intend to have them dry, if it takes all the money we have got"; or words to that effect? And your replying, "Well, the company is doing all it can to furnish us brick," or "the right kind of brick"?

A. I don't remember anything of the kind.

Q. You don't remember being in the yard?

A. No, sir, I do not.

Q. Do you remember seeing the men sorting or repiling the bricks on any day during the test? [484]

A. No. I may have seen them, but I didn't pay any particular attention to them, and I cannot remember distinctly that I did see them. I would not say that I did or did not.

Q. You referred in your direct testimony to a suggestion that you use bricks of a greater percentage of moisture than ten per cent. Who made that suggestion?

A. I don't know as it was particularly a suggestion, but in discussing the matter he advised the use of them inferentially.

Q. Who?

A. Millard. Most of his statements were made inferentially as man to man. He wanted to give me the benefit of his experience and advice without doing it officially.

Q. You do not understand that the gas company was wanting you or asking you to use bricks of a greater percentage—

A. That was not the idea. He was doing this as

(Testimony of B. S. Pederson.)

a personal matter and suggesting that to me.

Q. Were not those remarks made sometime between the time when Mr. White on or about December 13 asked for bricks of a greater percentage of moisture than ten per cent, and your letter of the 28th where you countermanded that and said you would take the bricks according to the contract? Was not that the period when the matter was discussed?

A. That matter was discussed at so many different periods that it might have been discussed at that time, too. But it seems to me a matter of opinion largely between Mr. Millard and myself which is the better bricks, and the discussion particularly came up the day we were testing out the machine with the preliminary test. It was then discussed and it possibly was discussed later on.

Q. At what time or times in December, if at all, did you examine the bricks that the company had on hand? [485]

A. I don't remember that I examined them at all at that time.

Q. Were you here in the month of December, 1909?

A. Yes, I was here the latter part of the month for a day or two, I think; I was passing through to somewhere else.

Q. There is in evidence a letter from you dated December 28, 1909, dated in this city and addressed to Mr. Luckenbach. Perhaps that will refresh your recollection as to whether you were or were not

(Testimony of B. S. Pederson.)

in this city on that day. A. Yes.

Q. You were in the city on December 28th, were you? A. I was.

Q. Do you remember how many days you had been here then?

A. No, I don't think so. Possibly a day or two. I was on my way to another portion of the territory.

Q. I want to read a sentence from this letter so as to refresh your recollection and ask you a question from it. It is exhibit 15. "The fuel that you have on hand at present will be satisfactory, but we feel that it must be protected from additional moisture, and would ask that you protect the fuel that you have ready for us from rain and other moisture that may be precipitated upon it." Can you now say whether you had seen the brick shortly before writing that letter, or at any time before writing that letter?

A. I should judge from that that I had seen the brick, but I do not recollect the occasion.

Q. Does that letter refresh your recollection as to the weather and the fact that you suggested that they must protect the bricks from rain? Do you recall whether it had been recently raining?

A. It must have been raining sometime previous to my being here. I don't remember whether it rained here or not. [486]

Q. Do you remember whether anything was done or being done to protect the bricks from further moisture?

A. Not during my present remembrance. I un-

(Testimony of B. S. Pederson.)

derstand that it was, but personally I didn't have any knowledge of it. I think it was in one or the other of the yards that were fenced in. I don't think I saw it. And even so, I may have glanced at it and seen it.

Q. You have observed with these lamp-black bricks as the general characteristic of all lamp-black bricks, that when they are heated or when they are hot they lose some, at least, of their cohesiveness?

A. I have seen that.

Q. Did you ever notice what happens to the brick as to the form when they strike the fuel bed in the generator? Did you ever look into the generator at that time to observe what occurred to them?

A. You mean after they were heated?

Q. Yes, sir. Did what happened there bear out your statement that when you heated the bricks they disintegrated?

A. They disintegrated. Particularly so with a high amount of moisture in them. They disintegrate to a very fine—almost entirely into powder. Whereas, the drier helped them hold their shape better.

Q. Now, this chute, through which the bricks were slid down into the generator was, I think you said, a tolerably convenient method of feeding the fuel into the generator. A. Yes, sir.

Q. You spoke of the perforations in that chute being of certain dimensions and that the perforations were separated by a strip of solid metal, so that there was a space in which the fine material could

(Testimony of B. S. Pederson.)

lodge. [487] A. Yes, sir.

Q. Isn't it true that these perforations were in series or alternated relation, so that lower down the chute the perforations would come beneath the solid part of the tier of holes above or the tier of partitions between the holes above? Do I make myself clear?

A. I understand what you mean, but I cannot recall whether that is so or not.

Q. So, if you don't recall that, you do not know that it is an actual fact that it was a long, straight natural piece of sheet iron from top to bottom, along which this could slide uninterruptedly when it got down into the generator?

A. Yes, sir. That would not have the same effect, because the lower strip would still have these—it would not be to such an extent if they had long strips going the entire length, but it would to a certain extent. A disintegration of the brick took place in the entire passage of the brick into the generator. Even after it left the strip it would disintegrate in the chute going down.

Q. You were not in any way bound to deliver the fuel into this generator by this particular method? I mean bound in the sense of being under any obligation. It rested with you to put the fuel into the generator in the manner most advantageous to yourself?

A. It rested with us to use the apparatus furnished us by the gas company to do it with. Otherwise we could not work efficiently.

(Testimony of B. S. Pederson.)

Q. And it rested with the gas company to make such modifications in the apparatus for your use at the plant as you desired to have made?

A. In that part of the plant.

Q. Did you ever ask for any different method of delivery [488] of fuel into the generator than the one furnished? A. Personally, I did not.

Q. And one of the reasons for that was that you thought it was a satisfactory method?

A. Well, it was satisfactory so far as the actual mechanical device was concerned, but I believe there was a question came up. Mr. White suggested that we throw it down on the floor and shovel it in, but that would take so much time to do that we would not get the operating time in.

Q. Who suggested that? A. Mr. White.

Q. Wasn't there one time when you got cars or carts and tried that method? A. Yes, sir.

Q. Who suggested that?

A. That was suggested during the times we were shut down.

Q. I want to get it clear that the gas company was not dictating to you in what way you should put the fuel into the generator?

A. No, we could discard their apparatus and use our own means for doing it. But they were supposed to co-operate with us.

Q. And furnish you something else, in reason, if you wanted something else?

A. Which I think they refused to do.

Q. During the operation of this set there was a

(Testimony of B. S. Pederson.)

leak from the generator—at the top of the generator—during this—March 10th to March 30th?

A. Yes, sir.

Q. Wasn't that of sufficient importance and extent that the men working there were very much inconvenienced and distressed [489] by it?

A. I explained that, I think, yesterday, by saying that that inconvenience to the men was caused particularly by the fact of this fine dust coming down on the floor and sifting through the floor plate and burning on top of the generator and creating a dense smoke, which would not occur from a plain leakage of gas.

Q. Wasn't the odor of that smoke different from the odor of the gas that leaked from the generator, so that the two could be distinguished?

A. Not when they came together as they did there. It would be difficult to distinguish those odors.

Q. Referring to the operating floor and to the fact that the plates in it were not level, and loose, it is a fact, is it not, that during the operation and the close of the operation of this test, the operating floor was in such a condition, namely, not level, and the plates loose?

A. It is a fact that all iron floors are placed loosely on the frame work built for them. They are made to fit between the spaces between the I-beams, and it is not the general practice to bolt them down or fasten them other than by their own weight. The floor was raised a little over the top of the generator, but only

(Testimony of B. S. Pederson.)

to the extent that the generator expanded from the heat there.

Q. By "raising" you mean thrown out of level?

A. Yes, sir, a little out of level. I would not say over an inch or two. But not at other parts of the floor.

Q. Otherwise, you say that floor was constructed according to good practice. A. Yes, sir.

Q. Isn't it a fact that one of the plates of that [490] fell and hurt a man and you paid damages for it?

A. That is a fact, but there was a condition entirely abnormal. A spark, supposedly from their works, came over while our plant was shut down, and caused an explosion which shook the building and threw this plate up and turned it over so that it could fall through to the lower floor. That is a condition that probably would not occur once in a million times.

Q. Referring to that small brick that you produced here yesterday, an inch or two thick, that you say you made with the hand-press, is it not true that the press that you made that is of such a character that it twice presses the brick, once the upper plunger comes down and then by some mechanical arrangement in the press the other comes and presses the brick the second time?

A. No, sir, that is not true. It is one direct pressure when the lower plunger comes and meets a plate fastened over the top.

Q. (By Mr. EDWARDS.) You don't know what

(Testimony of B. S. Pederson.)

the pressure per square inch was or pressure on the area?

A. No, sir, I had no means to obtain that knowledge. I just used one of those little hand-presses.

Q. (By Mr. GOUDGE.) Do you know whether by the use of a brick-making machine such as are in common use for the making of lamp-black bricks, any greater pressure could be used and was used in the making of these bricks furnished you for fuel in this set?

A. I have information from the makers of these machines. But actual knowledge I have none, not being in the brick-machine business. It would be knowledge gained from the men who make them.

Q. And you say you never saw one of these machines operating [491] except this machine?

A. That is all.

Mr. GOUDGE.—That is all. It is understood that the witness will make up the data from those reports and bring them in later.

Redirect Examination.

Q. You stated in answer to Mr. Goudge's question that you had some familiarity with the use of gas-making apparatus using lamp-black in San Francisco, and this plant here in this city?

A. Yes, sir.

Q. And the fact that they use lumps instead of bricks or bricks and lumps together?

A. Yes, sir.

Q. Do you know whether those machines get efficiency from that use or not?

(Testimony of B. S. Pederson.)

A. To the extent approximately of 50 per cent of the standard machines using coal and coke.

Q. Do you know the size of these four water-gas making machines they have here?

A. I did not measure them myself, but my information is that it was two ten-foot machines and two eight-foot machines. I am ready to stand corrected on that. I think they are approximately correct.

Q. You say in using the fuel that way they get 50 per cent efficiency?

A. I don't know positively as to this plant here. That was my understanding. But as far as the San Francisco plant, I have positive information to that effect. [492]

Mr. GOUDGE.—The witness said 50 per cent efficiency of the coal machine.

A. Exactly. A machine using coal or coke. I also have positive information to the effect that using briquets that were dried properly, that they got full efficiency as compared with coal or coke. That is on record, and it is on record in our Pacific Coast Gas Association.

Q. (By Mr. CHAPMAN.) Do you know where any test was made to ascertain the relative efficiency?

A. Made in San Francisco at the Potrero Works.

Q. You asked about some conversation with Mr. Creighton at the brick works. Do you recall any conversation with Mr. Creighton about the efficiency of this plant and apparatus?

A. The only conversation I recall with him was one evening he happened to be down here and we were

(Testimony of B. S. Pederson.)

talking over the machine and the operations, and we seemed to run along nicely, and he expressed the fact that he was satisfied that we would come within our guaranty, and he further said that if they did accept the plant he would be making two and a half million feet on it inside of two months, or words to that effect. One evening we were at the works there as we walked across the street to the corner.

Q. You were asked about changes made in the scrubbing and condensing apparatus in this set. In this test or at any time after the changes were made and the apparatus ready for gas-making, did you have any trouble with the capacity of the scrubbers and condensers to handle the product?

A. The only time we had any trouble at all would be when the gas company would neglect to furnish us a full quantity of water. But this complaint they usually remedied immediately and I don't even know if it is on record. Usually when any conditions of that kind occurred, we would put it on record on [493] the report. But I did not think it was enough to warrant even making a complaint about. The condition of the superheater and condenser at that time were normal during the entire test.

Q. The scrubbing and condensing apparatus, you say, was adequate?

A. It was adequate, without any question.

Q. You were asked about regularity or uniformity of size of fuel in the water-gas apparatus using coke and anthracite coal, and you said something about breeze. What is that breeze?

(Testimony of B. S. Pederson.)

A. It is the fine particles or small particles of coke produced by the friction of one lump of coke against another.

Q. Do you know whether any means were usually taken to keep that out of the generator, or was it kept out? A. It was usually kept out.

Q. Why?

A. Because it creates a condition of filling up these smaller spaces, and a clean coke would give better results and a freer fire and better fire, and an opportunity to become incandescent throughout the entire mass. And in breeze or coke the ash is in the nature of iron and foreign matter, which forms a hard clinker, and with a great quantity of breeze it was apt to form a good, hard clinker on the grate-bars.

Q. Is the result of dust and fine stuff in the lamp-black very similar to breeze?

A. So far as the fire itself is concerned, although it does not have the same effect as far as clinkers are concerned.

Q. You were asked about the effect of putting too much oil in the carbureter, and thereby overloading it. If you put more oil in the carbureter than it was capable of taking care of, would that immediately manifest itself?

A. It would by the oil coming over into the seal. If [494] you give it more oil than the carbureter had capacity for, it would come over and show in the seal as oil running over. It would condense in the seal.

(Testimony of B. S. Pederson.)

Q. Would it invariably show in the seal and thereby indicate that you were overloading the carbureter?

A. Yes, sir.

Q. During this test did you have any indication at all that you were overloading it by the appearance of oil in the seal? A. I did not.

Q. If you were putting too little oil in the carbureter or carrying your heats too high, would that manifest itself?

A. That would be indicated in the seal by the appearance of the lamp-black in the seal.

Q. Did you have any trouble of that kind?

A. Not to my recollection.

Q. You were asked something about the effect of having an excessively strong blast in the generator as to carrying over greater quantities of pulverized matter into the carbureter through the blast. What regulates the necessity of the pressure of the blast in the generator?

A. The condition of the fuel bed.

Q. If that fuel bed had been open and loose and filled with the proper crevices by reason of having a substantial fuel there, could you materially decrease the blast pressure?

A. I should judge we could decrease that pressure to the same point, where we carry it on coal and coke, namely, 10 inches—not over 12—instead of 20 or 21.

Q. Do you know whether any change was made in the blast line immediately before this test was started, with reference to its size?

A. I do know, because an extra line was put in—

(Testimony of B. S. Pederson.)

an [495] extra blast line and a temporary valve put in till we could get one from the east.

Q. Does the pressure of the blast have anything to do with the combustion that *take* place?

A. The pressure would not; the volume would. Of course, by decreasing the size of the opening, you would have to increase the pressure in order to secure the volume. But the volume is the actuating power of combustion.

Q. You were asked whether or not the experience you had a few days after you got here indicated to you that the set must have been started with a dirty carbureter, and you answered that it did. I will ask you if the set had not been started before you arrived and you had been given an opportunity to have arrived here and made some examination of the machine and experimented with it before you were forced to start, whether the carbureter would have been cleaned?

Mr. GOUDGE.—We object to that as irrelevant and immaterial and based upon assumed facts not in evidence.

The COURT.—The objection is overruled.

(Plaintiff excepted to the ruling of the Court.)

A. Had they not started till I arrived, we should have examined that carbureter thoroughly—taken off all the doors—and I would have personally ascertained that the machine was in condition, having much more experience in testing out these apparatus. I should probably have got into it more thoroughly than it was done. I would not have taken for

(Testimony of B. S. Pederson.)

granted, possibly, some conditions that were taken for granted.

Q. Have you had experience with these kiln-dried bricks before the test was started, before you arrived here? A. I think not.

Q. You say that when the heat is applied to these bricks [496] they tend to disintegrate, and that they showed signs of that in the generator when they were dropped into the fire. Do you know whether bricks that are properly bricked and sun-dried and are not affected by this kiln-drying, have sufficient stability to maintain their shape in the generator?

A. I have tried out some of those bricks and they have been tried out, and I find that they will hold up if they are properly prepared. Much better than these could. The fact is, we have very little trouble with their disintegrating if they are properly prepared.

Q. Are they subjected to any jarring or hard usage in the generator after they are in the fire?

A. None whatever. The fact is, after the brick arrives in the generator and it is a dried brick, it is apt to stay in that shape until it is consumed, whereas a wet brick or one that is loose, the heat on the exterior of the brick heats up the moisture in the interior and an explosion effect takes place which disintegrates it. [497]

Recross-examination.

The COURT.—To what cause or causes do you ascribe the failure of your test to even approximately reach in production the capacity to which you testify?

(Testimony of B. S. Pederson.)

A. Entirely to the condition of the fuel that was provided for the generator.

Q. (By Mr. GOUDGE.) You stated that properly air-dried brick would stand up in the generator after it is thrown into the fire. What experience or knowledge have you of that fact?

A. There were times during our earlier tests where you gave us comparatively dry brick. I think at one time we had a few as low as 9 per cent moisture. On comparing these with what were given to us with the higher percentage of moisture, we found that they would stand up better.

Q. Now, you refer, when you speak of these bricks that were once furnished you as low as 9 per cent moisture, to some previous runs of the machine before the test?

A. Yes, sir, the previous summer when I was making the test to determine our changes. I think we had bricks of different percentages of moisture. It ran from 21 per cent down.

Q. That was in the summer of 1909?

A. 1909, immediately after the supplemental contract was entered into.

Q. Was that before or after the change was made in the generator. A. It was before.

Q. Otherwise those bricks were the same as the bricks that you used in the test?

A. They were not.

Q. In what other respects did they differ?

A. The ones used in the test were kiln-dried, whereas I [498] don't know of any kiln-dried

(Testimony of B. S. Pederson.)

brick being furnished me prior to that time.

Q. You said, and it is true, is it not, that the bricks which were furnished during the test may have been sun dried or air dried? You don't know about that?

A. That I don't know.

Q. Except for the fact that these bricks furnished during the test had been subject to artificial heat, they were the same kind of bricks that you referred to in the summer time?

A. Not in adhesive power or in any other respect. The ones furnished the previous summer were in much better condition and came to us in better shape, and they stood handling better. While they were not at any time absolutely satisfactory they were so much superior to the ones furnished in the test that there can be no comparison. We could almost call them good, in comparison with what was given us during the test.

Q. State as near as you can the exact time when this satisfactory brick was delivered to you and used, that you speak of—that you say were thrown into the generator and stood up better than the brick used in the final test? A. Did I say it was satisfactory?

Q. Well, more satisfactory.

A. Well, I said better brick than the ones furnished in the test.

Q. All right. I want to locate the time when these bricks were used, so we may know what bricks you referred to.

A. I think it was in the early part of August, 1909.

Q. Was it the experimental run you made next

(Testimony of B. S. Pederson.)

after the making of this supplemental contract?

A. Yes, that is the time I referred to.

Q. How long a run did you make then? [499]

A. I think it was about ten days.

Q. At that time, how much gas per day did you make? A. I don't remember.

Q. Have you any record of that?

A. I haven't got it here. I may have it in San Francisco.

Q. Did you make 3,000,000 cubic feet a day?

A. I did not.

Q. Did you make 2,000,000 cubic feet a day?

A. I think not.

Q. Did you run 24 hours a day during that test?

A. I did not personally, but I think we did.

Q. You understand me when I say did you make so much a day?

A. The apparatus was operated 20 or 24 hours a day.

Q. You understand me to mean when I ask you what it produced in 24 hours, the rate per day of 24 hours? A. Yes, sir.

Q. (By the COURT.) I will ask you one question: To what process could the lamp-black furnished by plaintiff for the test made between March 10th and March 30th, 1910, have been subjected to so as to make bricks suitable for use in this apparatus of that set?

A. The lamp-black should have been dried as we expected it to be down to below 10 per cent, and

(Testimony of B. S. Pederson.)

then pressed in a brick and solid brick. The lamp-black brick furnished us, by reason of the large amount of moisture at the time they were made, became, when the moisture was driven out, a porous, spongy mass.

Q. You claim that the lamp-black should have been brought to the desired degree of moisture before it was made in the form of bricks?

A. That is the idea.

Q. The imperfect process of which you complained is that the lamp-black was not dried or brought down to the proper degree of moisture before being pressed into the form of brick; is that the idea?

A. Yes, sir. [500]

Redirect Examination.

(By Mr. CHAPMAN.)

Q. Did fire-drying have any detrimental effect on them?

Mr. GOUDGE.—We object to that as calling for the conclusion of the witness on a matter on which he has had no experience.

The COURT.—The objection is overruled.

(Plaintiff excepted to the ruling of the Court.)

A. Yes. The fire-brick kiln-drying process seems to have a very detrimental effect on the brick. It caused the brick to become loose and spongy and very easily disintegrated by the mere handling. Much more so than a brick that was made even with a large percentage of moisture and allowed to gradually dry in the sun or in the air. It seems as though that fire-drying took all the binding material out or

(Testimony of B. S. Pederson.)

loosened it up to such a matter—it might in time set and become hard, because the samples that we have here are considerably harder than the others. But the fact that they were kiln-dried and given to us hot afterwards, I imagine, may have had the effect on the brick that it did have.

Q. You were asked something about disintegration of bricks after they went into the fire, and you said that some of them held up better than others, and that those were properly made or made with reasonable substantialness. In pulling out the fires did you ever find any of the bricks unbroken?

A. I wouldn't say that I found any of them unbroken. I found occasionally—we would get a brick out that apparently had the shape, but much smaller than the ordinary brick, and the indication would be that it had not broke in two.

Q. What is this "U. G. I. Company"? [501]

A. United Gas and Improvement Company. It is a Philadelphia concern that operates a large number of gas-works throughout the east. They also manufacture water-gas plants. They manufacture and operate both.

Q. Does coal or coke disintegrate when subjected to heat the same as lamp-black in a fire?

A. No, sir. You can take the entire mass of coal or coke after it becomes incandescent and pull it out of the fire, and it holds its form and you can quench it and put it out on the floor and use it again.

Q. Did you ever see any of this California oil in any water-gas apparatus and notice the results?

(Testimony of B. S. Pederson.)

A. Yes, sir.

Q. You were asked also about the increase in the grate area and raising it from 86 square feet to 140 square feet. Was that 140 square feet in one fuel bed?

A. No, sir. It was in two, divided by the brick wall.

Q. Did the increase in the grate area in the reconstruction of the generator have any effect to prevent dust going over into the carbureter, or would it have any effect if the fuel had been as you expected it?

A. Ordinarily it would have the effect of lessening it because the same quantity of air approximately passing through the larger bed of fuel would travel much slower. It would go through more slowly and would not have the carrying force that it would have in a smaller generator. [502]

[Testimony of E. C. White, for Defendant
(Recalled).]

E. C. WHITE, recalled on behalf of the defendant, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. It has been testified that you arrived in Los Angeles some time about December, 1909?

A. December, 1909; yes, sir.

Q. Prior to the time that you arrived how long had you been in the gas business?

A. About 23 years.

Q. How long had you been employed by The Western Gas Construction Company?

(Testimony of E. C. White.)

A. About six or seven years. About six years, I think.

Q. In your experience with gas-making and handling of gas apparatus, have you operated any machines? A. Yes, sir.

Q. Water-gas machines? A. Yes, sir.

Q. A considerable number of them?

A. Yes, sir; both in this country and England and Ireland.

Q. Have you been engaged as erector and installer of such machines? A. Yes, sir.

Q. And have you been employed in any other capacity in the gas-making business?

A. I was eastern manager of The Western Gas Construction Company with offices at New York, when I was ordered to come out here.

Q. Have you had any technical education in the science of gas-making or gas-engineering? [503]

A. No, sir, my education is all practical. I commenced in the office.

Q. You are not a graduate engineer?

A. No, sir.

Q. When you arrived here in December, 1909, was this machine completed?

A. No, sir, it was not completed. The Western Boiler Works were working on it.

Q. Did you take charge or supervision of that work? A. I did.

Q. Were you down there every day?

A. Yes, sir.

Q. From the time you got here till the test was

(Testimony of E. C. White.)

ended sometime afterwards? A. Yes, sir.

Q. Was that work let to the Western Boiler Company by contract or was it done by day labor?

A. It was let to the Western Boiler Works by contract.

Q. Did you take any measures to push the work along and expedite its completion?

A. Yes, sir; we kept it going right along.

Q. Did you assist yourself, by taking part in the work and doing such things that might be necessary to do and that you could do?

A. Very little, because it was let out by contract.

Q. Do you recall about what time the machine was in a condition to first make gas?

A. Yes, sir. I have the records in my pocket.

Q. Refreshing your recollection by referring to those records, can you give us the time when you first began to operate?

A. January 20th, 1910, wasn't it. [504]

Q. Did you make any gas on that day or was that started up?

A. Started up. We made 1,420,000 feet.

Q. How long did you run?

A. We ran until January 24th.

Q. What happened on that day?

A. The blast pipe exploded.

Q. That is the time the explosion occurred?

A. Yes, sir.

Q. Did that interrupt the operations?

A. Yes, sir, that put us out of business for a time.

Q. How long before you resumed experiments with this set?

(Testimony of E. C. White.)

A. February 17th was the next run.

Q. Between the time you shut down in January and when you started up on February 17, were you on the ground all the time pushing the work and preparing to operate? A. Yes, sir.

Q. Besides the explosion of that blast pipe line, was there any other explosion or accident that occurred?

A. Yes, sir, there was a hole left in the scrubber and a spark came over and ignited the gas in the scrubber. It caused quite a lot of damage around there to our apparatus, and that necessitated quite a lot of work to put it in shape.

Q. Were you engaged in replacing and repairing that damage during the period that you were shut down? A. Yes, sir.

Q. On February 17 you started up again. How long did you run? A. We ran till the 28th. [505]

Q. Were you there every day at the works?

A. Yes, sir.

Q. What were you doing during that period?

A. We were operating the machine under different conditions of fuel, to try and get it balanced so that we could go on with the test, but I had about decided that the machine needed more air, and I don't remember whether I had told Mr. Luckenbach that or not. I don't think I had. After he demanded us to go on I proceeded afterwards to put in another airblast.

Q. You had perforated the chutes before?

A. I had perforated the chutes in the last part of February.

(Testimony of E. C. White.)

Q. Do you recall in what manner the chutes were perforated, what the size of the perforations were?

A. They were about an inch and a half wide by three feet long—slits cut in the back of the chute. I just took a chisel and a hammer and ripped out one side and then bent the piece right down.

Q. The machine while you were making these alterations and repairs was not in operation, was it?

A. No, sir.

Q. From your knowledge of what occurred afterwards during the test, for the next three or four days, are you able to state whether or not the carbureter was clean after the work had been done on it?

A. Yes, sir, I found the carbureter was plugged up badly two or three days after I started with the test on the 10th. [506]

Q. What would that indicate?

A. Well, it indicated that it hindered the make.

Q. I mean as to the condition of it on the 10th, if anything?

A. Well, it indicated that the carbureter was in bad shape. I thought that I erred in judgment.

Q. (By the COURT.) The carbureter was in bad shape and what?

A. I made an error in judgment.

Q. What do you mean by an error in your judgment?

A. He asked me if I examined the carbureter to see if it was clean, and I said I thought it was clean. That was my judgment. But after we had been running three or four days it indicated that it was not

(Testimony of E. C. White.)

clean, but that it was very dirty, and I had to clean it afterwards.

Q. (By Mr. CHAPMAN.) Had you any conversation with Mr. Luckenbach on the subject of shutting down one day in seven? A. I had.

Q. Can you state approximately when or at what place?

A. No, sir. I cannot state at what time it took place. It was on several occasions that I reminded him of the fact; when I first came here I talked about it and he always said they would take that up later on after the test and decide on whether we were to be allowed a day a week or not. I remember one time—I think it was on the 26th of January—Mr. Pederson and I were at his office and we talked it up, and at that time he said it was a very good point to be considered and he would take it up and go into it later on. I never could get him to state that he would allow a day a week.

Q. Was there anybody else present besides Pederson, yourself and Mr. Luckenbach at any of these interviews at which the subject was discussed?

A. I think the gas company never in any instance has a conversation with me that they did not call some witness in. [507]

Q. Can you recall who, if anyone, was present on any of these occasions?

A. I know that Mr. Vance was present that day that he called Pederson and I in. It was the day of the accident down at the works. The day that he called us up there and asked us to remove the set and

(Testimony of E. C. White.)
give them their money back.

Q. Did he make any reply to this other statement in this letter to the effect that in case anything happened to the machine that you assumed that credit would be given for the time lost?

A. He said in that case that anything of that kind should be taken up after the test and be dealt with individually and separately, each case.

Q. After the machine had been operated during the test for the period of three days, the 10th, 11th and 12th and 13th, I guess, you then shut down on account of the carbureter? A. Yes, sir.

Q. At or before the time that you shut down did you have any conversation with Mr. Luckenbach about it?

A. Yes, sir; just before I shut down I went to see him about it and told him that our carbureter was in bad shape, and that I deemed it advisable to shut down, as I described it, to take the bull by the horns and get it cleaned out right away, and then I asked him about a day a week. I said, "If we are allowed a day a week as I have understood that we were to have, which is only customary and just, it is my idea that we can lose the two or three days that it will take to rechecker, and go ahead and make up the amount of gas. He said that he never said that they would allow three days. That we could shut down or go ahead and do as we pleased; that it was nothing to them. He would give us no opinion. He said that was our own business. [508]

Q. Did he say anything about allowing credit for

(Testimony of E. C. White.)

any time lost in that way? A. No, sir.

Q. He said nothing about that?

A. No. As I say, he gave no opinion. He said it was up to us to go on with the test—start March 10th and stop on March 30th. That was all there was to it; and as he said before, these things would be taken up individually.

Q. Did you ever subsequently at any time ask Mr. Luckenbach—

The COURT.—What was that? Did he say anything about stopping on the 30th?

A. Yes, sir; that we were to commence on the 10th and run till the 30th and complete the twenty-day test. That we would stop on the 30th.

Q. (By Mr. CHAPMAN.) Did you ever subsequently say anything to Mr. Luckenbach about allowing credit of a day a week in cleaning out, or for the three days lost in recheckerizing?

A. I cannot recall the dates; as I say, it was spoken of several times about the day a week. When I first came here I asked him about it when I learned it was customary, and I brought it up several times to see if he wouldn't say he would allow us that so we could figure on it, but he never would. [509]

Q. (By Mr. CHAPMAN.) Now, in the course of the operation of this machine, during the test, did you have any conversation with any of the officers or employees of the gas company or persons in charge of the works as to the candle-power which you were to maintain?

A. The chief gasmaker in charge of the candle-power.

(Testimony of E. C. White.)

Q. What was his name?

A. I think it was Larrimore. They called him Larry.

Q. How many times did you talk with him about it?

A. I talked with him every day. He seemed to be more interested in the candle-power than in the machine.

Q. State the substance of what was said between you.

A. He would come to me and say, "Your candle-power is a little low," or "a little high." I would say, "What is it?" And he would say "25," or whatever it was, and they wanted the candle-power reduced when it was high in order, as they said, to make a proper mixed gas for the commercial gas for the town.

Q. (By the COURT.) Did you run it up to 25?

A. I said 20.5. No, sir. We never ran it to 25.

Q. Did you run it above 20? A. Yes, sir.

Q. Were they using this gas that you were generating for commercial purposes?

A. Oh, yes. They shut their own machines down.

Q. (By Mr. CHAPMAN.) Was there anything said about the approximate average figure at which they might carry their mixed gas or their commercial gas? A. Yes, sir; they said 19 to 19.5.

Q. Did that have anything to do with your maintaining the candle-power at an average of less than 20?

A. Not at all. We could have 20 candle-power

(Testimony of E. C. White.)

easy enough. [510]

The COURT.—He did not understand the question. Read the question. (The Reporter reads the question.) Connect that question with the one preceding, Mr. Chapman. The witness does not understand it.

Q. (By Mr. CHAPMAN.) Were you informed by this chief gasmaker of the average candle-power which they said they sought and desired to maintain their mixed gas at, or their water-gas that was made by your machine?

A. Yes. He said they wanted about 19 to $19\frac{1}{2}$, and he was telling me about the candle-power being low or high, so I could regulate to suit the condition.

Q. It already appears in evidence that the candle-power of your machine on an average was carried at less than 20. I will ask you why you did not carry the candle-power at 20 or more?

A. Because I considered it was high enough—19 was high enough to give them gas of the required candle-power that they wanted for the mixed gas.

Q. Did you have any conversation with Mr. Luckenbach on the subject of the candle-power?

A. Yes, sir, when I first came here I talked with him about it.

Q. State what took place at that time.

A. In reviewing the conditions of the contract with him I stated that I noticed that the contract called for four and a half gallons of oil per thousand and 20-candle-power gas—20 to 22—and I said that that was dividing the four and a half gallons per thousand into 20 candle-power, and would be 4.44 candle-power per

(Testimony of E. C. White.)

gallon; that that was the way it was usually expressed and meant in contracts with guaranties. I asked him if that would be satisfactory—if that was the way he saw it or understood it, and he said that would be all right. [511]

Q. Do you know whether or not that machine could have made an average candle-power in your operations at 20 or more?

A. It would have been very easy to do it, yes, sir.

Q. What governs or controls the candle-power of gas in a gas machine such as this?

A. It is simply a question of, when the machine is ideal, putting in more oil, or there is another way to do it, and that is to reduce your blast and not have the heats as high, and carry lower heat and put the oil in and that will naturally make it a higher candle-power. But with this set with ideal conditions with the size of that generator, we could easily have put in enough oil to make 20 candle-power gas, had I known they wanted it and were going to hold now that they maintained that the contract called for it and they insisted on it, I could easily have done it.

Q. Do you know whether any track was kept of the carbon that was removed from the ash-pit and also the collection-chamber described in the carbureter?

A. Yes, sir; it was weighed and credited, I don't say credited, but it was reported to me—the weight—and I made a note of it from day to day.

Q. Have you got the memorandum on which you noted the record of the ash or carbon removed?

(Testimony of E. C. White.)

A. I have. I did not weigh it the first three days of the run. It was averaged.

Q. Have you got that memorandum with you?

A. Yes, sir.

Q. Will you please produce it?

A. Do you want me to read it?

Q. Let me ask you first, is that a memorandum of weights given you with the exception of the three days that were averaged? [512]

A. It is two days that I have marked the average—the 10th and 11th are the two days that I have averaged—instead of three.

Q. And those weights, you say, were given you by the gas company employees who had charge of that matter? A. Yes, sir.

Q. And did you note them on that memorandum?

A. I did.

Q. I will ask you to refer to the memorandum and state what the weights were for each day.

A. The following is a statement of the weights of the waste or ash, being the fine stuff that came out of the bottom of the generator and the uptake flue of the carbureter. There were no weights taken for the 10th and 11th, but

March 12	4850	pounds
13	6000	"
14	7350	"
15 & 16	none	
17	2200	"
18	9750	"
19	10500	"

(Testimony of E. C. White.)

March 20	5450 pounds
21	7550 "
22	9000 "
23	10100 "
24	8465 "
25	8000 "
26	4600 "
27	2150 "
28	4300 "
29	5300 "

For the 10th and 11th there were no weights taken, but I [513] made a proportionate estimate for those two days by taking five or six days subsequent and averaging it according to the amount wasted on those days in proportion to the gas made, and figured the approximate amount, and my estimate was 12,000 pounds for the 10th and 9,000 pounds for the 11th.

The total waste carbon that did not go into the generators but which fell through the slots in the chutes on each day are the following:

March 10	11100 pounds
11	16200
12	14050
13	20325
14	not weighed
15	shut down
16	not weighed
17	32800
18	28675
19	16250
20	10850

(Testimony of E. C. White.)

March 21	7550 pounds
22	13960
23	23700
24	9720
25	13700
26	18900
27	12375
28	7900
29	12100

We got credit for the waste that came through the chutes. That which came from under the grate bars out of the chamber in the carbureter, while it has been referred to as ash, is not all ash. We had a door on the side of the carbureter [514] and the materials removed from there twice a day, morning and evening, but no record was kept of that separately from that taken from under the grate. It was removed from the place where it came from the chamber in wheelbarrows. Some days there would be a great deal more taken out than others. The material that came from the carbureter chamber and a considerable part of that that came from under the grates was lamp-black. [515]

Q. When you came here in December, did you make any examination of the brick that they had piled up across the street for use? A. I did.

Q. What examination?

A. I looked at them piled up there.

Q. Did you handle them at all? A. I did.

Q. Do you know when the kiln-drying started?

A. No, I cannot state exactly. I think it was in February.

(Testimony of E. C. White.)

Q. How did the brick compare, as you examined them prior to the kiln-drying, at the time you came here, with the brick that was kiln-dried—I mean as to tensile strength and the physical qualities?

A. In kiln-drying the bricks, it undoubtedly destroyed the tensile strength and they went to pieces very rapidly and easily. They would not stand handling.

Q. Did you handle any of the kiln-dried brick with a view to ascertaining their strength?

A. No, sir, I did not give it much attention till we commenced the test and got into trouble.

Q. I mean after the test started?

A. After the test started I certainly did.

Q. Can you describe in a general way how much handling they would stand and how easily they might be broken? [516]

A. The principal and most perceptible observation of their breaking was from the time they left the hole down in the ground and got up on the chute—became dumped over. And they had a severe fall from there down to get into the bottom of the bin that connects into the chute. They came tumbling over each other and rattling down and hitting that gate and bouncing over each other. That is where the severe strain was on the brick. It knocked them all to pieces.

Q. Was it worse some days than others?

A. Yes, sir.

Q. Did it create any dust or clouds of material in the air while they were going up in that manner?

(Testimony of E. C. White.)

A. The dust was something fierce. You couldn't recognize a man while you were charging, standing two feet from you. It was just one mass of dust from the fine and dried kiln-dried bricks. The dust they formed was like you take a dusty street with a dozen horses stampeding. It was something fierce.

Q. You observed some portion of the fine stuff and broken material finding its way through the slits in the chute and falling to the ground?

A. There was a great deal went past the chutes. The heavier bricks pushed on through, they went in so rapidly.

Q. Was there any considerable quantity that did not go through the slits, and passed into the generator?

A. I should say that the slits would not be able to catch one-half of the fine stuff that went into the generator, not counting the broken bricks. It was exceptional that a whole brick ever went in. They were generally broken in two. But if they were all like that, we would not have complained—if they had held together in that respect. But they went apart in pieces. [517]

Q. What effect did it have upon the fire?

A. It had the effect of deadening the fire and packing it. (Question and answer read.)

Q. What do you mean by that?

A. I mean to say that if 30 per cent of fine stuff was caught on the floor through the chutes there was at least 30 per cent more of fine stuff that went by the chutes that did not fall, and went into the

(Testimony of E. C. White.)

generator. That is, of course, only estimated. I had no way of telling the exact amount. But the amount of fine stuff that went by was material—very material.

Q. How great in quantity was that which went into the generator?

A. You mean from the time the bucket turned?

Q. Yes, the perforated portion of it.

A. I should say it was 25 or 30 feet from the top to the chute, and then from the chute over to the mouth of the generator is about 10 or 12 feet.

Q. And was it steep or on a gradual incline?

A. The top bin or first bin where the bucket dropped in the air, was very steep coming down; and from there on what we call the chute, that was hinged onto the bottom of this bin, and was not so steep.

Q. Did the bricks travel with considerable velocity through the perforated portion of the chute?

A. When the chute was nearly empty they would drop from the top to the bottom just like a man taking a brick and throwing it right down. But, of course, as the chute was filled up, which was part of the time, they did not have such a high fall.

Q. Was that entire portion that you have described—the [518] 12 feet—close to the generator and the remaining portion—the steep part—all perforated?

A. No, sir, it was not all perforated. The chute that was perforated I think was only perforated up about 12 feet high. It was perforated—as I stand on the floor I could reach it, down from where the re-

(Testimony of E. C. White.)

porter sits, up about that far (illustrating) where I had slits cut. And then there was another section where I had a man get up and perforate that for about five or six feet.

Q. (By the COURT.) Was that done after you began the test or before?

A. Before the test. It was done just prior to the test, in February.

Q. (By Mr. CHAPMAN.) What was the appearance of the fire after this fine stuff was dumped in there?

A. It was a close sort of a mass, packed and not open as it should be in order to get good results. They should have been whole or half bricks tumbled around so that the air or steam could get around them or perform their functions.

Q. Did that condition necessitate any increased pressure-blast?

A. Yes, sir; I gave it all the blast that I had.

Q. Why was that necessary?

A. In order to try to get air up through the fire, it was so packed.

Q. Did that have any effect on the amount of fine stuff that was carried over into the carbureter?

A. Unquestionably. The air forcing its way up through would get what is called a blow-hole and blow through, and form a regular whirlwind of suction, as it were, and carry the stuff over. Whereas, if it had been heavy and good big lumps, the air would not have picked it up. I have observed the same [519] in making gas where they use coke.

(Testimony of E. C. White.)

The coke is very light and the pieces are small, and if the blast-pressure is heavy it will take the small pieces of coke and breeze over.

Q. After you had the carbureter rechecked and started to make gas again, did you have any unusual trouble with the fuel?

A. Yes, sir, on the 17th was a very bad day. We started, I believe, on the 17th. The first day we commenced to operate we got a bad dose.

Q. Did you take up the matter with Mr. Luckenbach at any time? A. Yes, sir, I wrote him.

Q. You wrote this letter of March 18th, marked Plaintiff's Exhibit 24, protesting against the character of the fuel? A. I did.

Q. In response to that letter did you receive any visit from or have any conference with Mr. Luckenbach? A. He wrote me, I believe.

Q. He wrote you the letter dated March 18, 1910, marked Plaintiff's Exhibit 25?

A. Well, he wrote me.

Q. You recall the circumstances that Mr. Luckenbach testified concerning himself and Mr. Edwards calling at the gas plant and having an interview with you? A. Yes, sir.

Q. What is your recollection of what took place at that time?

A. That was, I believe, the morning of the 22d. May I ask if that was the date—

Q. I am referring to the interview that Mr. Luckenbach referred to as having taken place on the 18th, and I think he fixed the time by a memorandum he had. [520]

(Testimony of E. C. White.)

A. That was not the 18th. That was the next complaint I made about hot bricks.

Q. Your recollection is that it took place on the 23d?

A. I don't know what date it was. It was after this occurrence. They went on for a couple of days and I went down there, and I think it was on the 22d, and I found that they were serving hot bricks or warm bricks, and these were crumbling so that everybody around the works was talking about it—the drivers, the chemist and the gasmakers. It was the common talk that the bricks would hardly hold up till they got across and started to dump them down in the hole. They had to handle them very carefully. It was a good thing that they did. They were warm and ready to crumble to pieces at the slightest touch, and we were getting such a tremendous quantity of fine stuff that morning that I wrote another letter and sent it up to Mr. Luckenbach by a messenger, protesting against the hot brick. I was about ready to give up at that time.

Q. I show you Plaintiff's Exhibit 26, and ask you if that is the letter you refer to having written on that occasion? A. This is the 23d.

Q. Yes. A. Yes, sir.

Q. (By the COURT.) What is the form of lamp-black before it is bricked?

A. It runs off with the water from the oil-sets. Being lighter, it floats on top of the water and some of it going along with the water. They run it along with the water to the settling bins and then draw off

(Testimony of E. C. White.)

the water from the bottom and leave the lamp-black in the pit and let the sun dry it until they get ready to take it and put it in wagons and carry it over to the briquet machine, and there they have what [521] they call a Cummers Drier, which is similar to a big cylinder similar to what is used in making cement—and they dry it out in that way by shoving it in from one end of the cylinder and it rotates along to the other end, the fire under the cylinder heating it. They put it then in a mold and press it in the shape of bricks.

Q. What is the condition of it as to being less than 10 per cent moisture? Does it cake up or disintegrate?

A. It cakes up and you can squash it in your hand.

The COURT.—It is friable.

A. Yes, sir.

Q. How could that answer for fuel in one of these water-sets before being bricked? Couldn't you use it as fuel with any results?

A. Not unless it—I don't believe it could. I don't think it would have the tensile strength. You have to press it together.

Q. Suppose you were to shovel it into your wagon and dump it into the generator; does it accomplish any results as fuel?

A. I think the results that would be obtained would be very inefficient. In fact, I know in San Francisco where they have used it in lumps they made the claim that they got about half the efficiency that they do where they brick it.

(Testimony of E. C. White.)

Q. (By Mr. CHAPMAN.) I do not understand that to be the Court's question. Suppose it was shoveled in in a fine state?

A. He said when the state of moisture was 20 per cent.

Q. Yes, or less than 10 per cent.

A. The result obtained in that case, I think it would about the same condition that we had. No results at all. The steam penetrating the fine stuff kills the fire. There is no body. Nothing to work on.

[522]

Q. How about the particles blowing over to the carbureter?

A. It works that way. It is so fine and light that an extreme blast pressure that we were obliged to put in there carried it over.

Q. In other words, it would not be practical fuel in that shape? A. Absolutely impractical.

Q. Did you call Mr. Luckenbach's attention to the condition of the bricks being hot?

A. Yes, sir. He came right down to the works with Mr. Edwards and wanted to know what the matter was. I told him the bricks were hot and that it was useless to go on under such conditions, and I asked him if he would—if it would be agreeable to him if I would take the wet brick that he had and use half and half—half wet and half dry—to see if we could not build up the fire and get some results, and he said no, we had to use what they gave us. We asked for carbon having less than ten per cent moisture in, and they kiln-dried it, and that is what we

(Testimony of E. C. White.)

had to use. I showed some of it to the superintendent in his office. He said that didn't make any difference; that it was up to us.

Q. On that occasion or any other occasion did you tell Mr. Luckenbach that the bricks as you had received them had been satisfactory?

A. I did not.

Q. Or in answer to any question of Mr. Edwards as to your satisfaction or dissatisfaction with the bricks, did you make any such reply?

A. Absolutely no. I did not write that letter complaining of the bricks and change my mind in ten minutes from the time they had gotten that. [523]

The COURT.—What did you say when he came down?

A. I said that the bricks were something awful; that I couldn't make gas with them; that they were crumbling so that it was impractical and it is absolutely useless to continue trying, and bring about some such result; that the carbon was ruined on account of being kiln-dried; that the bricks would not stand up at all; there was no tensile strength. And I asked him if it would be agreeable to let us use some of the moisture bricks, stating that they couldn't be any worse than these and we might be able to work out, and he said no.

Q. (By Mr. CHAPMAN.) You say you exhibited some bricks or samples and broke them up; did you break them up in their presence?

A. I took the bricks in and showed them to them in the superintendent's office, and showed them how they crumbled.

(Testimony of E. C. White.)

Q. Did they crumble?

A. They did. They were full of fissures. The heat in driving the water out had undoubtedly loosened up the openings or fissures.

Q. Was it difficult to break them or could you do it easily with your hand?

A. I broke them easily.

Q. How about the one that you showed them? Did that exhibit the same characteristics, being easily broken? A. I took in three or four.

Q. How about them in that regard?

A. They were all bad. I didn't want to take in one to them; I took in three or four; as many as I could carry.

Q. Did he come over and look at the conditions that day?

A. No, sir. I asked him to come over and look at it. He had never been over there to my knowledge. He said he [524] wouldn't come over and dirty his clothes going over there.

Q. During the test or afterwards did you take any samples or any of these bricks, Mr. White, and deliver them to any chemist for analysis?

A. Yes, sir.

Q. To whom?

A. To a Mr. Maas, chemist for the Braun Chemical Company.

Q. Did he make any report to you of the results of his analysis? A. He did.

Q. In order to refresh your memory as to the dates when the samples were given to him, I call your at-

(Testimony of E. C. White.)

tention to these three purported reports of the chemist, and ask you if from those you can state the place from which you took the samples or from which the samples were taken, and the dates, and what they were. A. This first one that I hold—

Q. You understand, Mr. White, that you can examine the statements and refresh your memory as to the dates?

A. Yes. I can testify to these. One is a kiln-dried brick taken from the kiln-pile, May 28th, 1910, and I have here another sample taken in a sample can, of the run of March 12, showing the amount—showing the analysis—and another report of carbon taken from under the grate of the generator, May 28th, 1910.

Q. Do you know whether Mr. Maas was present at the time that last one was taken that you refer to?

A. No, sir, I cannot testify to that.

Q. Was he present there on any occasion?

A. I cannot state whether he was or not.

Q. What did you do with these samples that you refer to?

A. I took them to Mr. Maas or he came to the works and [525] got some himself, and I don't know which are the ones he got and which are the ones I took to them.

Q. Were you present when he did take them?

A. Yes, sir.

Q. Now, as to these samples of kiln-dried brick that were submitted to Mr. Maas and which you have referred to after refreshing your memory from his

(Testimony of E. C. White.)

reports, where were they taken from?

A. They were taken from the yard over there where they were kiln-drying. They are all kiln-dried.

Q. Were they a part of the piles from which the fuel had been taken and was delivered to the generator during the test or not? A. They were.

Q. Do you know whether they were representative samples of the fuel that was delivered to the generator?

A. Yes, sir, I picked them out of the pile. They were all substantially the same.

Q. Was the fuel better on the first day than it was the following day?

A. It was not as brittle. There was sometimes when it was not quite as brittle as the others.

Q. Well, if you had brick that were not quite as brittle and as good as those used on the first day, I mean from the 10th of the month, do you think the machine could have made an average of 2,700,000 feet per day? [526]

A. No, sir, I think it would fall down. I am strong in the belief that kiln drying spoils the brick. They got worse from the first day; they kept packing and getting worse. The first day was not so bad.

Q. If you had had a fuel in the form of bricks substantially and strongly made, with a moisture of less than 10 per cent, what would you say in your opinion as to the quantity of fuel consumed per thousand feet?

A. If we had had sun-dried brick *such we used*

(Testimony of E. C. White.)

there first, it would have held together. I know they would because I had slapped them together and punched them around. It was only problematical what we could have made with the machines readjusted as she was during the last test. We had never run the machine with the second air line on the former or preliminary test. We went right on from the 10th of the month with a new line which increased the efficiency of the machine, and there is no telling how much could be made with substantial carbon.

Q. But I am talking about the fuel consumption—the quantity of fuel consumed per thousand feet of gas made?

A. Well, I can't state that consumption. I don't feel prepared to say. I have not had the experience in the carbon and I cannot testify as to what might have been or what might not.

Q. I don't expect you to state any positive result that would be obtained, but merely the expression of an opinion, if you have an opinion, which you think is substantiated by experience.

A. I would not feel competent to answer the question how much it would make. I can simply state from the observation of the carbon the conditions would have been materially better and more in our favor for making more gas. [527]

Q. Did you see the machine after the test was ended, after the machine was shut down? A. I did.

Q. When was the test closed?

A. On March 30th.

Q. The morning of that day?

(Testimony of E. C. White.)

A. The morning of the 30th.

Q. Do you know whether there was any more fuel furnished there for a continuance of the test?

A. There was fuel left, but we were given to understand on the morning of the 30th that that was the end of the test, and I made no attempt to go on.

Q. Do you know whether there were any operators furnished by the gas company to proceed and continue with the performance?

A. I cannot state, but as I say, the test was to run from the 10th to the 30th, and, so far as I know there was nothing said about going on till later.

Q. How long after that before you saw Mr. Luckenbach? A. I saw him during the day on the 30th.

Q. Where?

A. I believe at Mr. Trippet's office. I don't know. I think so. I think I was over at his office and we went down to Mr. Trippet's office.

Q. Relate what took place between Mr. Luckenbach and yourself.

A. I went up to see him and he says we had fallen down and didn't come within a mile of making the guaranty, and that it was just as he expected, and I told him that I was satisfied we could make it if he would allow us to go ahead and clean the machine up and make a few minor repairs and put a new gasket in and protect the generator head by a couple of I-beams, and rechecker the carbureter and superheater,—that we could demonstrate that we could make good. He said the test [528] was over and settled, and that we hadn't made good,

(Testimony of E. C. White.)

and that was all there was to it.

Q. (By the COURT.) What time was that?

A. In the morning.

Q. Where? A. At his office at the gas works.

Q. On the morning of the 30th?

A. Yes, sir; after we got through the test. I don't know that I tabulated my report, but I kept in pretty close touch with what was going on down there, regarding results, at least, and he was very forcible in saying that it was over; and "You are through now, get out"; and they wanted their money back and for us to take the machine out. And then we went to Mr. Trippet's office after dinner in the afternoon and Mr. Trippet told them we had been to a great expense there and we had shown results, and we were willing to go ahead and make a demonstration, and wanted to do what was right and convince them that the machine was all right. Well, it was all unsatisfactory to Mr. Luckenbach. I don't remember exactly what he said, but he was very mad and disgusted and wanted to wash his hands of the whole thing.

Q. (By Mr. EDWARDS.) Was there anything said about the character of the fuel at that time?

A. I don't know whether we talked about the character of the fuel at that time, but we talked about it so much that it got to be an old story. They all knew how I felt about it. I told him or as much as told him there was no use continuing under such conditions; that we couldn't do anything with that fuel; that the kiln-drying had spoiled it.

(Testimony of E. C. White.)

Q. In your proposal to make a new test or demonstration was anything said about the character of the fuel that you used?

A. I don't know that we took that up. [529]

Q. (By Mr. EDWARDS.) Was anything said about any defects in the machine at that time? I mean in the way of breakage or damage or dilapidation?

A. Yes, he said the machine was in a dilapidated condition and not fit to go on. I explained to him they were only mechanical defects that could be fixed for a few hundred dollars, that the test had been very severe on the machine and the performance of the machine to my mind, barring the leak in the gasket which was very annoying—and which was quite a loss to us—the gas we lost—however, it was only a mechanical defect; that the Western Boiler Works in putting the gasket in, it got to leaking and we could not stop during the test to tighten it up or change it. But, barring a few minor details of that description, there was only eleven minutes of the whole twenty days that was lost—five minutes was in looking at the seal, taking the plates off, and six minutes one time when the valves got stuck. Eleven minutes altogether.

Q. You mean exclusive of the three days?

A. Exclusive of the changing of the carbureter and the coaling in the morning and evening.

Q. Did you say anything about willingness to repair the defects if the machine was accepted?

(Testimony of E. C. White.)

A. I told him we would gladly put the machine in good shape and make a demonstration and convince him the machine would make good. I felt that it could in proper condition.

Q. (By the COURT.) What do you mean by proper condition?

A. Proper fuel that had tensile strength.

Q. (By Mr. CHAPMAN.) Were you sincere in that offer and belief that you expressed to him?

A. I was.

Q. Was any such remark made by the officials of the gas company, or was it a mere conclusion?

[530]

The COURT.—Anything other than those he has already testified to. He has already testified to some remarks made. The objection is that it is an inference for the Court to draw. This witness is about to testify to remarks made by Mr. Luckenbach. Now, are there any other things that led you to that inference?

A. Mr. Luckenbach was extremely bitter to our company and antagonistic, and said we were a crooked bunch, and never did anything right in our lives, and were not capable of taking a contract and fulfilling it, and there was not a gas company in the state that had any use for us. He said first there was not a gas company in existence, and I says, "Do you mean to insist on that, Mr. Luckenbach?" and he said, "Well, in the state then." He was extremely bitter.

(Testimony of E. C. White.)

Q. (By Mr. CHAPMAN.) Did you go down there at any other time after the test accompanied by any other gas men?

A. Yes, I took a couple of men down there.

Q. State at what time and who they were?

A. I think it was April 20th. I took Mr. Caldwell and Mr. McGillibray down to look at the condition of the set.

Q. Did you look at the machine at the same time?

A. I did.

Q. What condition did you find it in?

A. The checker brick in the superheater had tumbled at one side about four or five feet in and four or five feet down, and the generator had leaked. But not making gas at that time, you would only know that from past experience. The generator head had bulged up slightly, and raised the cast-iron floor a little bit, but as it cooled off later on, it was hardly perceptible. It had gone back. The generator neck when we first commenced to run had bulged slightly, but it never gave us any trouble after that. There was a leak of gas between the carbureter and the superheater in the nozzle at the bottom. I cannot recall anything else just now. [531]

Cross-examination.

Q. Mr. White, you testified that you had an experimental run of this plant on January 20th, and I think at that time you operated it until the explosion took place. Is that right? A. Yes, sir.

Q. When that operation was made on January 20th, was the generator in the form that it was in

(Testimony of E. C. White.)

when the final test was made? That is, as to the division—the changes had been then made in it, had they? A. Yes, sir.

Q. This brick division had been put in and the other changes made in the generator that have been testified to? A. Yes, sir.

Q. So that the generator was in the same form and had the same grate area and divided in the same manner that it was and had at the time the final test was made? A. Yes, sir.

Q. And the grate area we have been informed by another witness was about a hundred and forty square feet, taking the two sections of the generator together? A. Yes, sir.

Q. On that day, January 20th, you testified that the make was 1,420,000 cubic feet; is that correct?

A. That is right, yes, sir.

Q. And that was the day you started up on that experimental run? A. Yes, sir.

Q. You ran until January 24th when the blast-pipe exploded. What was the make on the next day after January 20th, namely, January 21st? [532]

A. 1,595,000 feet.

Q. And January 22d, what? A. 1,959,000 feet.

Q. And January 23d? A. 1,915,000 feet.

Q. Then, you did not run the whole of the 24th?

A. No.

Q. Do you know what quantity of fuel was consumed in making those quantities of gas on those days respectively? A. I do.

(Testimony of E. C. White.)

Mr. CHAPMAN.—I object to the witness answering the question for the reason that the data from which the fuel consumption was to be ascertained is already in evidence, and his statement would be a mere calculation. * * * I thought he was inquiring about the final test. We withdraw our objection.

Q. (By Mr. GOUDGE.) Please state what quantities of fuel on those days respectively were used?

A. The 20th was 86,520 pounds; on the 21st, 121,890 pounds; on the 22d, 111,905 pounds; on the 23d, 95,900 pounds, that was before the new blast line was put on.

The COURT.—What is the requirement of the contract about fuel?

Mr. GOUDGE.—35 pounds per thousand cubic feet. So that for 2,000,000 cubic feet there would be 70,000 pounds.

The COURT.—That is about 35 tons?

Mr. GOUDGE.—Yes, except that all our figures are in pounds of carbon.

Q. Now, you operated for 15 or 16 days in February, 1910—

The COURT.—Is that method of carrying it in pounds instead of tons arbitrary, or is there some advantage in it?

Mr. GOUDGE.—There is a little advantage in it. Another point is that the contract says 35 pounds to a thousand feet, [533] and it is difficult to convey that unless you keep it in pounds.

Q. You operated again for 15 or 16 days in Feb-

(Testimony of E. C. White.)

ruary, did you not?

A. I think only 10 days, and a portion of another day.

Q. Starting up on February 17th, and running till the 28th, I believe you testified? A. Yes, sir.

Q. At that time you had repaired or some one had repaired the blast line which had collapsed in January? A. Yes, sir.

Q. How much gas per day did you make during that February run?

A. February 17th, 1,704,000 cubic feet; 18th, 1,751,000 feet; 19th, 1,790,000 cubic feet; 20th, 1,872,000 cubic feet; 21st, 1,811,000 cubic feet; 22d, 1,540,000 cubic feet; 23d, 1,561,000 cubic feet; 24th, 1,500,000 cubic feet; 25th, we were shut down perforating chutes; 26th, 1,644,000 cubic feet; 27th, 1,532,000 cubic feet; 28th, 1,294,000 cubic feet. That is all.

Q. Please give the consumption of fuel on each of those days respectively, in pounds?

A. Fuel in pounds: February 17th, 109,950 pounds; on the 18th, 99,000; on the 19th, 124,755 pounds; on the 20th, 94,715 pounds; on the 21st, 115,760 pounds; 22d, 93,500 pounds; 23d, 100,800 pounds; 24th, 62,300 pounds; 26th, 107,200 pounds; 27th, 71,950 pounds. That is all.

Q. (By the COURT.) If the capacity of the generator or apparatus is such as you have testified, how is it that you account for not making a larger production for the amount of fuel that you consumed on this test?

A. We didn't have enough air, and after this test

(Testimony of E. C. White.)

and prior to the final test we added another 20-inch blast-line [534] which gave us the increased efficiency.

Q. (By Mr. GOUDGE.) Now, Mr. White, what kind of fuel did you use during the January run—January 20th to 24th.

A. We used lamp-black.

Q. In brick form? A. In brick form.

Q. In February run, the 17th to the 28th, what kind of fuel did you use?

A. Lamp-black in briquet form.

Q. Where did these bricks come from? They were bricks made by the Los Angeles Gas and Electric Corporation, were they not? A. Yes, sir.

Q. How did the tensile strength of these bricks compare with those used in the final test from March 10th to March 30th?

A. Oh, they were much better; they were much stronger in tensile strength.

Q. But otherwise, they were from the same lot of brick?

A. Some were sun-dried and some were fresh brick just made.

Q. On the 25th of February, during the February run, you say you shut down and I also understand you to say that on that day you perforated the chute? A. Yes, sir.

Q. Prior to that time the chute had not been perforated? A. No, sir.

Q. What was the reason for perforating the chute on the 25th of February?

(Testimony of E. C. White.)

A. I wanted to get all the fine stuff out that I could.

Q. Had any of the brick used by you, if you know, in the January run that you testified to, or the February run, been kiln-dried? [535]

A. Not that I know of.

Q. Do you know what the moisture content was?

A. Yes, sir.

Q. What was it? A. For each day?

Q. No. State an average, if you can, or a range of the moisture content.

A. I have each day all kinds. From 3 per cent to 12 per cent and up. Wait a minute. I have one 3.9 and from that up to 27.

Q. Is that true both for the January and February run?

A. No, I didn't have any as dry as that in January.

Q. What was the range of the moisture content in the January run? A. 8½ to 27.

Q. Did you know each day what the moisture content was? A. I did.

Q. It was not any bricks that were passed to you without your knowing what you were getting? I mean there was no concealment about it?

A. The chemist made the analysis and gave it to me.

Q. Were you demanding at that time brick of less than 10 per cent or insisting on brick of less than 10 per cent moisture?

A. No, sir. I was trying an experiment.

(Testimony of E. C. White.)

Q. It is a fact, is it not, that you wanted brick of different moisture so that you might try them?

A. Yes, sir, and I thought we were supposed to try the different brick to see how they acted.

Q. Did you discover by means of these two runs any definite relation between the moisture content of the brick used by you and the efficiency of the operation of the machine [536] measured in feet of gas produced per pound of carbon used?

A. No, sir. I did not consider that I ran the machine long enough and got distinct carbon often enough to give an opinion on that.

Q. These two runs do not disclose any such relation? A. These two runs would not.

Q. They did not? I am asking you did they? Not would they in your opinion, but did they?

A. They gave the results. I have got the whole thing tabulated.

Q. And do those results disclose any ascertainable relation between the moisture content of the brick used and the efficiency of the machine as shown by the quantity of gas produced, per pound of carbon consumed?

A. I can't say that I was proficient enough with the machine and knew the conditions well enough to make comparative tests of that kind and give efficiency.

Q. At any rate, you could not ascertain any such relation by reason of these two runs?

A. No, sir.

Q. And your experience with these different

(Testimony of E. C. White.)

classes of fuel? A. Yes, sir.

Q. You were asked whether or not you advised Mr. Luckenbach on January 24th, that is, the date of the explosion of the blast line that you were going to commence the test on March 1st. Do you recall that question?

A. I did not tell Mr. Luckenbach that I would begin because I did not feel that I was ready by any means.

Q. Did you tell anyone connected with the gas company at that time? A. No, sir. [537]

Q. What was the condition of the set at 6 A. M. of March 10th? Did you have your heat up?

A. I had the heats up.

Q. And it is a fact, isn't it, Mr. White, that on the morning of March 10th, when you began this final test you believed that the set was in good condition for commencing the test?

A. Yes, sir, I thought that I had taken too little time to get the heat, but I was perfectly satisfied with it at 6 o'clock in the morning. Everything was all right. I looked at the grate bars. There was water under the bars and they were in good shape.

Q. And when the clock struck 6 on March 10th in the morning you were ready to commence the final test? A. Yes, sir.

Q. Now, you have described the slit in this chute as being an inch and a half wide and about three feet long. How far apart were they?

A. I should say three inches or four inches.

Q. And the slit would be three feet long. And

(Testimony of E. C. White.)

what interval would there be between the end of that slit and the next slit on a direct line below it?

A. Probably six or eight inches.

Q. Would the next slit down the chute be in a direct line below the first, or would it be to one side? Was it alternating slits as you passed down—did you alternate the slits and the spaces between them?

A. I don't remember whether they were alternated or straight down. I think they were straight down.

[538]

Q. And on the 14th, finding the carbureter in the condition it was in, your conclusion is that it was not as clean as you thought it was on March 10th?

A. That is the idea.

Q. But it is also true that if the carbureter had been inexpertly managed and too much oil furnished to it this same condition of the carbureter might have been brought about in the three or four days it was run? A. Yes, sir.

Q. Now, when you discovered this condition of the carbureter you determined that in the interests of the corporation of the machine and the success of the test it was best to close down and clean it?

A. I did. [539]

Q. At that time you stated in your direct testimony that you referred to the custom of shutting down one day a week? That is, I mean you referred in your statement to Mr. Luckenbach? A. I did.

Q. You didn't know anything about that custom of shutting down one day in seven till you came here to Los Angeles, did you?

(Testimony of E. C. White.)

A. I knew it was customary to shut down any kind of a piece of water-gas or oil-gas apparatus occasionally to burn out.

Q. But not one day in seven?

A. Not necessarily one day in seven.

Q. And, in fact, the custom that you speak of and refer to was the custom that you understood or discovered that the gas company followed with respect to the operation of its water-gas set?

A. They were in the habit of doing it and I thought it would be as good a way to burn it out as any, and I asked that we be allowed one day a week as it was the custom they had.

Q. The custom you refer to was their custom?

A. Yes, sir.

Q. And it was a custom that you learned of only when you came here?

A. In this particular system; yes, sir.

Q. Now, when Mr. Luckenbach refused to make any agreement or make any concession on that point and to agree that you might do that, you replied that you thought you could make it up anyway, or something to that effect?

A. He didn't refuse. He always said he would see.

Q. He didn't agree? He indicated that he would not agree then?

A. That is the idea. He never would agree to it but he always said he would see. [540]

Q. And then you said you thought you could make it up anyway?

(Testimony of E. C. White.)

A. I thought by shutting down I could catch up in what I would lose for a day or two.

Q. And you said so? A. Yes, sir.

Q. What did you mean by stating that you thought you could make it up?

A. I knew that with the carbureter in that condition, it would be folly to continue, and I mean by shutting down that we would clean the set out and make up more than we lost in the operation.

Q. That is to say, by closing the set down, even though you closed it down for two days or three days and thoroughly cleaning the carbureter, you would probably be—on the morning of the 30th—you would have made more gas, in spite of the cessation of operations for two or three days, than you would if you continued to operate?

A. I had that in mind. The three days that was in my mind—that I was to get that three days—and I always did have that in mind. I thought it was right and just that we should, and I thought we would in the end, and that he would come around to see it in that way.

Q. I understand. But I am asking you whether your statement and your belief that you could make it up—whether you did and do not mean by that that in the end, that is, by the morning of March 30th, you would make even more gas by stopping and cleaning for these two or three days than you would if you went right along without cleaning?

A. I had in mind the allowance of the three days. At the same time, I knew we could make more by

(Testimony of E. C. White.)

shutting down for three days, even if he wouldn't allow it, than by continuing. [541]

Q. That was what you meant by "making it up"—that you would overcome that handicap by the cessation of the three days?

A. I will not say that I would make more by shutting down, but I cannot concede the fact that I meant that I would throw out the three days and still make 40,000,000 cubic feet.

Q. If that is true, why didn't you go on in spite of your dirty carbureter and keep the plant in continuous operation? Isn't it true that if you did that you would make less gas than you did actually make up to the morning of the 30th—in your opinion?

A. Yes, I think I would have made less gas.

Q. You understood when you started this test on March 10th that the test would run from March 10th to March 30th? A. I did.

Q. And when you stopped operations on the morning of March 30th it was not because somebody came to you and demanded that you should stop, or that you were forced to stop, but you expected to stop at that time so far as this test was concerned?

A. That was the understanding.

Q. What other gas set or kind of gas set have you operated besides this within a year or two?

A. Water-gas sets.

Q. Using what fuel and where?

A. Coal—anthracite coal and Pennsylvania oil—Texas and Pennsylvania oil.

Q. And coke? A. Yes, sir.

(Testimony of E. C. White.)

Q. Any other lamp-black set?

A. Oh, I ran an oil set in Texas.

Q. And any other lamp-black set?

A. No other lamp-black set similar to this.

Q. And by lamp-black set I mean any other set using lamp-black as a fuel? [542] A. No, sir.

Q. You had not operated any other?

A. No, sir.

Q. Was there any fine carbon carried over to the carbureter during those experimental runs of January and February, 1910?

A. Oh, there must have been some.

Q. Don't you know? You operated the set during that time? A. Yes, sir.

Q. Was there, or was there not?

A. There was, certainly.

Q. And there were ashes and material in the ash-pit during these two experimental runs? A. Yes.

Q. And you are not able to say whether it was greater or less in proportion to the quantity of fuel produced or the quantity of gas produced on those occasions than it was on the final test?

A. I did not weight it and I would not want to qualify on that.

Q. In your letter of March 18th, 1910, to the Los Angeles Gas and Electric Corporation, attention Mr. Luckenbach, which is marked Plaintiff's Exhibit 24, protesting against the character of the fuel, then "being hauled this morning," you say, "If you can give us a grade of fuel similar to what we have previously had we can undoubtedly work the fine stuff out and

(Testimony of E. C. White.)

build up the fire again." What fuel were you referring to when you say the fuel "similar to what we have previously had?" [543]

A. Well, I meant the sun-dried fuel.

Q. And when had you had that?

A. We had it in January and February.

Q. And that fuel was the fuel you were referring to in this remark in this letter? A. Yes, sir.

Q. And that fuel had a moisture content running from 5 to 27 per cent, had it?

A. No, I think the 27 per cent moisture was some of the fresh dried. But it ran from $8\frac{1}{2}$ to about 23.

Q. Now, you were right here along from December until weeks after the conclusion of this final test. Do you have in mind what the weather was at any of these times? A. Yes.

Q. Do you recall whether in February or late in February or early in March it rained?

A. I know it rained, but I have no record of the days. I didn't put them down. I did not make a note of it.

Q. You got some brick in January as low as 5 per cent moisture content, didn't you?

A. No, sir; not that low. I just read it.

Q. I beg your pardon, as low as 8 per cent.

A. Yes.

Q. Do you know where those bricks had been?

A. No, sir; I don't know. They were all piled up across the street.

Q. You did know that they were not made at that time?

(Testimony of E. C. White.)

A. They told me they had been sun-dried for some time.

Q. How many brick had they on hand at that time?

A. Creighton told me there was about 3,000 tons.

Q. Do you know what proportion of that lot had a moisture content of 8 per cent or less than 10 per cent? [544]

A. No, sir, I made no analysis of them. I couldn't tell you.

Q. But you knew of the analysis of those actually furnished you in January?

A. The chemist made an analysis and handed it to me.

Q. Is it not true that the brick that were furnished you during the final test came from this same stock of brick? A. Yes, sir; they came from the same stock.

Q. And the bricks that were furnished you and were used in the final test, were not the brick that were then recently made? They were part of this same large stock that you used?

A. I was under the impression that they did make some fresh bricks and take them over and kiln-dried them, but I am not positive of that.

Q. At any rate, is it true that the great majority of the brick that you used during the final test were from this same stock?

A. Oh, yes, the majority were, and I think they were all. But it seems to me—I was thinking of it that I did see them haul over some fresh bricks and kiln-dry them, but I won't be certain.

Q. Do you know how it happened that in January

(Testimony of E. C. White.)

some of the brick which were reported to you as only sun-dried had a moisture content as low as 8 per cent, and that during the final test in March brick furnished from the same stock had to be kiln-dried in order to come below 10 per cent moisture? In other words, do you know what the necessity was of kiln-drying the bricks out of the stock of bricks that in January had 8 per cent moisture or less?

A. I understood that the bricks that were in the outside were drier than the ones on the inside.

Q. Do you know whether all the brick furnished during the [545] final test were kiln-dried or not?

A. Yes, sir, I think every brick we had was kiln-dried.

Q. But you don't know how it happened that it was necessary in order to get them down below ten per cent?

A. Only from what Mr. Luckenbach said. He said "You fellows come here and say we don't give you a brick below 10 per cent." I asked him why they kiln-dried them and he said that was his reason.

Q. You haven't had any experience in comparing or handling or manufacturing brick made from lamp-black have you? A. No, sir.

Q. Then where did you get your knowledge of the condition of the carbon lamp-black—the by-product from the manufacture of gas from oil—before bricking, and the manner of bricking, so that it can be used for fuel, that you testified to in answer to some questions addressed to you by the Court?

A. I observed down at the gas-works how they did it.

(Testimony of E. C. White.)

Q. The gas-works of the Los Angeles Gas and Electric Corporation? A. Yes, sir.

Q. When?

A. Prior to the test and during all the time that I was there. I have been all around there with them and seen them make it.

Q. You saw them making those brick?

A. Yes, sir.

Q. In form like the brick you were using for gas making? A. Yes, sir.

Q. Did you see lamp-black in rough lump used for gas making—water-gas making?

A. No, sir, they're not making any gas that way.

Q. Did you ever see lamp-black—the by-product of [546] gas manufactured from oil—used in a crude unbricked form for water-gas making?

A. No, sir.

Q. But you have heard of it?

A. I have heard of it.

Q. Before you came here to Los Angeles to operate this set did you know anything about the negotiations or correspondence which had taken place between the gas company and your company on the subject of the lamp-black to be used in this set?

A. Yes, sir, I proceeded from New York where I had charge of the eastern business or eastern office, to Fort Wayne, and there I looked over the correspondence casually.

Q. Do you recall seeing this letter of March 11th, written to Mr. Luckenbach by Mr. Guldin of The

(Testimony of E. C. White.)

Western Gas Construction Company and marked Plaintiff's Exhibit 3?

A. No, sir, I don't remember seeing that.

Q. Do you know when you first learned that in the operation of these water-gas sets by the Los Angeles Gas and Electric Company that they used crude lumps of lamp-black without bricking at all, in their operation?

A. I heard that they used lumps of lamp-black, and that is all I knew about it.

Q. And you heard that before you came here?

A. Yes, sir.

Q. I think you stated that you did not ever see lamp-black used in that form in any water-gas set?

A. No, I had never seen it.

Q. Did you ever hear that that was the practice in San Francisco also?

A. No, sir, I never heard that recently.

Q. Not before you operated this set?

A. No, sir. [547]

Q. Now, you said in connection with this same matter that the carbon had to be bricked so that they could be used as fuel. Upon what do you base that statement? A. I said it had to be bricked.

Q. I understood you to so state.

A. I said it was probably the best form to use it, or being briqueted, which would make it hold together.

Q. Do you understand the difference between the meaning of the expression "briquetting" or "bricking," or do you use one as interchangeable with the other?

(Testimony of E. C. White.)

A. There seems to be a confusion about briqueting and bricking. They have got to calling the big square pieces bricks and the small ones about the size of this can briquets.

Q. Do you make any such distinction; when you say "briquets" do you mean what we call bricks?

A. Sometimes we call them briquets and sometimes bricks. We are very liable to confuse it.

Q. I am trying to find out what you mean, because you have used the word "briquets."

A. I meant the word "bricks," because I knew it would be more practicable to brick them than to briquet them.

Q. And you have been intending it all the time as the size and shape of a common building brick?

A. Yes, sir.

Q. Do you know in similar gas-works of their using lamp-black in the form of briquets, making the distinction between brick and briquets, a briquet being the smaller lump?

A. I have heard of their using briquets in San Francisco.

Q. Do you know that the briquet is harder and denser than the brick?

A. I would say that it is depending on the way it is treated. There are a great many styles of briquets as well as [548] bricks. Sun-dried and the length of time they have dried in the sun, and so forth.

Q. Have you subjected any of these bricks or samples of any of these bricks that were furnished to you during the final test or furnished to you during either

(Testimony of E. C. White.)

of the two experimental runs in January or February, 1910, to any accurate compression test so as to be able to state what differences if any there were in their strength or density? A. No, sir.

Q. I will ask you whether you have subjected any briquets to any such test to compare them with the brick in the matter of density and strength?

A. No, sir.

Q. Do you know of any such test having been made with these bricks or briquets? A. I do not.

Q. I show you, Mr. White, two bricks that were produced by Mr. Pederson while he was testifying, first, one that is wrapped in paper upon which are some endorsements. I will ask you whether you can identify that brick?

A. Yes, sir, that is the brick. That is my writing.

Q. The writing on the paper wrapping of this brick is yours? A. Yes, sir.

Q. State when and where you obtained that brick?

A. I obtained this brick from the gas company's yard on Central and Aliso Street, May 14th, 1910.

Q. Do you know when that brick was made?

A. I do not.

Q. Whereabouts did you get it with reference to the pile from which brick was furnished to you for use during the final test? [549]

A. I got it over in the yard. I cannot say where. The bricks were all kiln-dried. They were all practically the same.

Q. Do you know whether the gas company had been making brick during the months of March,

(Testimony of E. C. White.)

April and May, 1910?

A. They were making brick there off and on, yes, sir. I don't know how much of the time.

Q. For how long a time, if at all, after March 30th, was the gas company drying brick in its yard by means of fires or kilns?

A. I don't know that they were kiln-drying any after March 30th.

Q. And as to this particular brick that you have now inspected, you do not know when it was made?

A. I know it was part of the old batch that was sun-dried and then kiln-dried; because it was in the piles in the yard next to the old foreman's house, and they were the same old piles that were undisturbed. And they were kiln-dried. I paid particular attention to that.

Q. It was the same pile from which the brick was furnished to you for use during the final test?

A. Part of the piles. They were all over the yard.

Q. Was it from one of the same piles or lot from which brick were furnished to you for use and which you used during the experimental runs of January and February, 1910?

A. It was kiln-dried brick. It was the same lot, but in January and February the bricks were sun-dried before they kiln-dried them. This was a kiln-dried brick.

Q. Was it from the same lot of bricks?

A. The same lot, yes, sir.

Q. Well, then, if that is true, all of the brick in these piles or this lot were air-dried up till January

(Testimony of E. C. White.)

and [550] February, and the bricks that you used during the final test in the same lot were in addition kiln-dried?

A. As I stated yesterday, there may have been some fresh brick taken over and kiln-dried, and I wouldn't notice it. It appears to me they were hauling a few fresh brick over and kiln-drying them.

Q. But you state if there were such, you didn't know it, and the majority were not of that character?

A. The majority were not. They were of the old stock.

Q. And those were part of the same lot from which you got your brick in January and February?

A. I got my brick in January and February from the old piles that had been sun-dried and during some part of the test I used the fresh brick—

Q. Then, from this same lot of brick—and the reason you identify this particular brick that you have now before you is that you know it is from the same lot of old piles, and from the same place—that lot of brick had been air-dried or sun-dried? And that was their condition in January and February, was it not? A. Yes, sir.

Q. And then when you came to the final test, this same lot of brick were in addition kiln-dried?

A. Yes, sir.

Q. Was this brick you used in the final test sun-dried and later kiln-dried? A. Yes, sir.

Q. And as to this particular brick which you just now identified and which you say was kiln-dried, is it true that it was also previously sun-dried?

(Testimony of E. C. White.)

A. Yes, sir, it was of that pile—the old original pile. [551]

Q. Is it a fair representative sample of the bricks furnished you that you used during the final test?

A. I would say it is eighteen months since that brick was taken, and having been in the room, it seems to have been hardened to some extent. While it laid in the yard exposed to the air, it was more porous and more liable to break than it is now. It is similar to the brick in the can. The tin was soldered on. I didn't see the man when he soldered it. He kept the brick closed and that eventually drew it up stronger than it was.

Q. Confining ourselves to the one in the paper, do you say from your examination of it now that it is in better condition in regard to density and strength than it was at the time you took it or selected it?

A. Yes, sir. Age has hardened it to some extent.

Q. You are not able to say what the condition of that brick now is with respect to the moisture content?

A. Oh, no, I couldn't tell without analyzing it.

Q. Do you know or have you any opinion what it is that makes that brick harder now than when you selected it?

A. No, sir, I just have my opinion that its age, and the heat, being in a closed room.

Q. But when you say it is harder now than when you selected it, that is not because you are reasoning that it ought to be harder now, but your actual observation is that it is harder now than when it was selected?

(Testimony of E. C. White.)

A. Yes, sir, the bricks at the time when we were picking them up and examining them—they were extremely brittle and soft, having been subjected to kiln-drying, it was destructive to them.

Q. This was not subjected to kiln-drying?

A. It was. [552]

Q. And yet you say it is harder and firmer now than it was at the time you selected it?

A. It appears so; yes, sir.

Q. Now, referring to the brick that is in the can, when was that selected and whence was it obtained?

A. This brick was taken at the yards of the Los Angeles Gas and Electric Corporation May 27th, 1910.

Q. From the same piles or lot as the one in the paper? A. Yes, sir, it is a kiln-dried brick.

Q. And in what respect, if at all, did that brick differ from the one that is now in the paper, in condition, at the time you selected it?

A. About the same, I think.

Q. Now, that was May what, did you say?

A. May 27th.

Q. Can you state whether or not at the time that brick was selected the condition of the bricks in the piles had changed with reference to density or hardness since March 30th?

A. I didn't make any examination then to compare them between the time of the test and May 27th.

Q. Then, if you are not able to say whether or not the condition is different, how can you say they are a fair, representative sample from the brick furnished

(Testimony of E. C. White.)

to you during the test?

A. I said they were kiln-dried bricks. I did not test it as to tensile strength. And I am only judging from the observation and handling them.

Q. When you say they are representative samples, you do not mean to limit yourself to the statement that they are kiln-dried bricks and the others are kiln-dried bricks, but you mean, do you not, that these at the time you selected them [553] were bricks having the characteristics and general character in all respects of the bricks furnished you during the final test?

A. Yes, sir. I picked these bricks up, knowing that they were kiln-dried brick.

Q. Were the bricks that were furnished you during the final test harder or softer or different in any character from these bricks at the time you selected them?

A. They were softer. Especially when they were heated and hot. Then they were especially so.

Q. Then, the condition of the bricks from March 30th to May 27th when you selected these had improved, had it—the same brick?

A. I think that as time goes on they will harden.

Q. Did they harden between March 30th and May 27, bearing in mind that you saw them then and went and selected samples of bricks? Was there any difference in the character of the bricks that you selected as samples and the character of the bricks furnished you during the final test?

A. Yes, sir; they had had a chance to set and

(Testimony of E. C. White.)

naturally the sun and air would make them harden. Both these samples are considerably harder than they were at the time of the test—right at the time they were kiln-drying. They are brittle, however. They all go to pieces.

Q. Now, you spoke in your direct examination of the fact that just prior to the final test of this set you had installed a second blast line. I understood that you had not run the set until the time of the final test, with this additional blast line. Is that true?

A. Yes, sir.

Q. How did the blast furnished by this additional blast line compare with the blast that was in use at the time of the [554] experimental run in January and February, as to the quantity of air furnished and pressure of air furnished to the generator?

A. It practically doubled the supply of air.

Q. In quantity? A. Yes, sir.

Q. Was there any difference made as to pressure or velocity?

A. Yes, I asked that they give us a certain number of inches of pressure, so we could have it if we wanted it. And, of course, if it was too much we could close it off.

Q. Can you state what pressure in inches you actually used during the final test?

A. Yes, I think about twenty inches.

Q. And in the experimental test of January and February what pressure did you use in the single blast line?

(Testimony of E. C. White.)

A. From thirteen to sixteen inches, I think.

Q. So that the difference between the operation during the experimental run and the final test run was that in the former you had from thirteen to sixteen inches pressure with one line, and in the final test you had twenty inches of pressure and double the amount of air?

A. Yes, sir, practically double. One line was a twenty-four inch line and the other was a twenty-two inch line.

Q. Did this set at any time in the experimental run or at any time whatever do any better than it did on the 10th of March?

A. Up to the time of the final test we didn't have in the secondary air line. I considered those performances were unsatisfactory. They were to us. For that reason, we put in this new line. That gave us the efficiency obtained the first day. [555]

Q. What is your answer to my question whether the set ever did any better than it did on March 10th?

A. No, sir.

Q. That was the maximum performance of the set at any time?

A. Yes, sir, after that we had trouble with the dirty carbureter.

Q. Do you know how much oil per thousand cubic feet of gas produced by this set was consumed from day to day? A. Yes, sir.

Q. Have you some report on that which you can refer to?

A. Do you mean from the 10th of March?

(Testimony of E. C. White.)

Q. Yes, sir. A. Yes, sir, I have got it.

Q. Will you please state, beginning on March 10th?

A. March 10th, 3.47 gallons.

Q. Gallons of oil per thousand cubic feet of gas produced? A. Yes, sir.

Q. March 11th?

A. 4.15; March 12th I have 4.2, and I am not sure whether it is 4 or 4.02.

Q. Our records indicate that it is 4.20.

A. 4.2 then. March 13th, 4.45; March 14th, I haven't got—I think it is so indistinct that it doesn't show.

Q. Would a suggestion aid in reading those figures? A. Yes, sir.

Q. May it be 5.49?

A. I see it now, it is 5.5. The 16th is 5.42; the 17th is 3.91; the 18th is 4.49; the 19th—4.32; 20th, 4.29; the 21st, 4.25; 22d, 4.47; 23d, 4.71; 24th, 4.44; 25th, 4.30; 26th, 4.69; 27th, 4.75; 28th, 5.13; 29th, 4.74.
[556]

Q. (By Mr. GOUDGE.) Please state what the average candle-power of the gas produced by this set was on each day of the final test?

A. On March 10th, 17.09; March 11th, 18.5;—

Q. Pardon me a moment. That first candle-power was that 17.9 or 17.09?

A. On March 12th, 19.3; March 13th, 19; March 14th, 19.2; March 17th, 17.9—

Q. What about the 16th?

A. I didn't take it on the 16th. On the 18th, 19.3; 19th, 18.9; 20th, 18.9; 21st, 19.3; 22d, 19.5; 23d, 19.9;

(Testimony of E. C. White.)

24th, 19.7; 25th, 18.4; 26th, 19.2; 27th, 20.2; 28th, 19.6; 29th, 19. Making an average of 19.5.

Q. Did you observe during this final test, Mr. White, that sometimes the candle-power of the gas produced would be greater than other times for the same consumption of oil? A. Oh, it varied.

Q. That is, with the same consumption of oil per thousand feet of gas produced, the candle-power would vary?

A. It would vary. Because the amount of hydrogen in the generator would probably not be the same.

Q. So that the candle-power did not always vary directly with the quality of oil used?

A. I think it was effected more readily with the amount of hydrogen being made, and we endeavored to stick to the number of gallons of oil and not switch. That is, take a hundred gallons and stick to that.

Q. A hundred gallons for a certain period?

A. Yes, sir, and go right along with it.

Q. Now, you spoke of the condition of the set when the final test terminated, and you described certain defects or conditions of unrepair that existed at that time. I will ask you whether in addition to the things which you mentioned [557] which were the checker brick in the superheater, the bulging of the top of the generator, the raising of the cast-iron floor, and the leak of gas between the carbureter and the superheater, whether there was not a large valve that had been temporarily repaired with cement?

A. No, sir, there was no valve that had been temporarily repaired with cement.

(Testimony of E. C. White.)

Q. Was there not a valve temporarily installed different from the one which should be there permanently or intended to be there permanently?

A. Yes, sir.

Q. What was that?

A. It was a 20-inch Ludlow valve from the gas company.

Q. One that was borrowed?

A. Yes, sir. We could send one from Fort Wayne, but the express is so great, and they wanted to know if I couldn't borrow one here.

Q. And your valve had not been installed at the end of the run? A. No, sir.

Q. Has it since been furnished at any time to the set? A. Certainly not.

Q. And these repairs that were necessary to put the set again in good condition, were they ever made?

A. They were not. [558]

Redirect Examination.

(By Mr. CHAPMAN.)

Q. I believe you have already testified that you offered to Mr. Luckenbach to put the set in condition if they would allow another test or demonstration and to accept it?

A. Yes, sir, I talked to him on the 30th of March, the day of the completion of the run, and I asked him permission to put the set in order to make a demonstration run.

Q. And did that include the restoration of that valve that has just been referred to?

A. We intended to put in one of our quick-acting

(Testimony of E. C. White.)

and opening standard valves, certainly.

Q. Did you offer to do so? A. We did.

Q. Were you willing to do so? A. Yes, sir.

Q. Can you state from your observation of the bricks that were furnished, whether they showed any defect in the dies by the failure to fill up the dies fully?

A. Yes, sir, they do show a defect, and they are not filled up. They afterwards, while I was there, put in new dies and the bricks were materially different in being filled out and square.

Q. Do you know whether they made any change in the dies during the test or shortly after?

A. Not shortly after. It was either shortly before the test or during the test that they put in new dies and called my attention to it and showed me the dies and showed me how nice the bricks were. [559]

Q. And are these brick samples here labeled—

A. No, the other.

Q. Two bricks, samples from the Los Angeles Gas and Electric Company's yard, between March 10th and March 30th, were they selected, and are well filled out. Most of the bricks have their ends knocked off, caused by the dies being worn, holes not being properly filled. Is the brick in that package brick that came from the new dies?

A. Yes. I took them just as they were being made. I took them up and had tin put around them.

Q. In the course of your cross-examination you stated that in your preliminary operations the moisture content was reported to you by some chemist.

(Testimony of E. C. White.)

Do you mean some chemist employed by you or the gas company chemist?

A. The gas company chemist.

Q. In all of these records or weights, candle-power, or oil consumption, that you received and noted upon these cards and which you testified you accepted, did you accept them upon the assumption that they were correct? Did you know anything about their correctness other than what they told you?

A. No, sir. I took their figures.

Q. And you accepted them in that sense that they said they were correct and you made no question of it but put them down accordingly. In the course of the cross-examination Mr. Goudge asked you if the poor condition of the carbureter—the clogged condition of the carbureter—could not have been brought about by an over-feed of the supply of oil into the carbureter, and you did say it would have been possible, and it was possible to overload the machine or carbureter with oil. I will ask you whether if that was the case the condition would evidence itself in some manner so that you could tell it?

A. Oh, yes, you could tell it in a moment by looking at [560] the overflow of the seal-pit, which is exposed to the gasmaker. If you put too much oil in the carbureter it will manifest itself immediately by being picked up and carried right along and put into the seal-pit.

Q. Do you remember the condition in this test?

A. No, sir, we could always put in more oil.

(Testimony of E. C. White.)

Recross-examination.

(By Mr. GOUDGE.)

Q. When you say you offered to repair the set and replace the valve that you should have furnished, that was on condition that you should be allowed a demonstration run or another run, was it not?

A. We would have put it on anyway if Mr. Luckenbach had said so, but he got up about it and wanted his money back and so on, and that is all there was to it.

Q. But you did say you would repair the set if they gave you another run?

A. Certainly; we would put it in proper condition, which only required a few minor changes.

Q. And when you offered to put it in condition you said you would do so if they let you have another run or demonstration?

A. Yes, sir. Outside of the checker brick it would not have cost \$200 to put it in first class condition.

Q. Now, as to the dies in the brick-making machine, do you know how long the dies are used in lamp-black brick-making machines?

A. No, sir, I do not. [561]

[**Testimony of E. A. MacGillivray, for Defendant.**]

E. A. MacGILLIVRAY, a witness on behalf of the defendant, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. TRIPPET.)

Q. What is your name? A. E. A. MacGillivray.

Q. What is your business?

(Testimony of E. A. MacGillivray.)

A. Building and selling gas machinery.

Q. How long have you been in that business?

A. About ten years.

Q. Where do you live? A. Los Angeles.

Q. How long have you lived there?

A. About seven years.

Q. Did you go with Mr. White to the gas plant and inspect some machinery that he had charge of?

A. I did.

Q. When was that, approximately?

A. That was a year ago last spring. About April 20th, 1910.

Q. Did you also see the carbon at that time?

A. Yes, sir, we looked about in the chute and looked at the carbon.

Q. Did you go up to the chute and bin above the chute that carried it in? A. Yes, sir.

Q. Any carbon in there? A. Yes, sir.

Q. What condition was it in as to its shape?

A. It was all broken up. [562]

Q. How fine was it broken up? Can you give us an estimate of that?

A. Well, there was a lot of dust—powder—besides a lot of pieces. Of course, it was not all powdered, but I should think—well, there wasn't any whole ones there at all, that I could see. They were all broken, more or less.

Q. Did you go out in the yard to view the carbon there? A. Yes, sir.

Q. Where is this yard that you went in?

(Testimony of E. A. MacGillivray.)

A. It was across the street from where the machine set.

Q. Did you see any kilns for drying where the bricks were made into kilns?

A. I wouldn't call them kilns. They were just stacked up on the ground. You might call them kilns.

Q. Was there any evidence of any fire having been around them or about them?

A. Yes, sir, I think there had been.

Q. What condition did you find those brick in? Did you examine them?

A. Yes, I examined them pretty thoroughly. They were all disintegrated more or less. I noticed where the wagons ran against some of them and they were all broken up. I took some and threw them down on the ground and they would break.

Q. Could you break them with your hand?

A. Oh, yes.

Q. They were easily broken, were they?

A. Yes, a great many of them were all ready to fall to pieces, it looked to me like.

Q. Did you examine the floor to the apparatus around the generator? A. Up on top?

Q. Yes. [563]

A. Yes, sir, I walked all over that.

Q. What condition was it in?

A. I didn't see anything the matter with it. I didn't see anything wrong with it. It probably was

(Testimony of E. A. MacGillivray.)

not perfectly level, but there isn't any of them that are perfectly level after they are used and heated up.

Cross-examination.

(By Mr. GOUDGE.)

Q. Did you ever see a water-gas set in operation using lamp-black? A. No, sir.

Q. You speak of these bricks in the yard that were stacked up. Where else, if anywhere, did you ever see any brick made of lamp-black?

A. I never saw any only in Los Angeles.

Q. Did you ever see any in Los Angeles prior to the time that you saw these? A. Yes, sir.

Q. Where?

A. I have seen them at the Los Angeles plant and where they have sold them around in different places.

Q. I call your attention to this brick resting on the paper, being one of the brick identified by Mr. White in his testimony, and ask you if you ever have seen such bricks as this sold in Los Angeles?

A. No, I don't know that I have. I think they were smaller I didn't pay much attention to tell you the truth.

Q. Before the time when you examined this brick, some time in April, 1910, when you went to the plant with Mr. White, had you ever made any critical examination of the brick made of lamp-black?

A. No, sir, I had not [564]

Q. I call your attention to this brick that I referred to just now that is wrapped in paper and identified by Mr. White, and I ask you if that is the sample or representative specimen of brick that you

(Testimony of E. A. MacGillivray.)

saw at the time you were at the plant with Mr. White? A. Yes, that looks very much like it.

Q. That was the kind of brick that you saw there?

A. Yes, sir.

[Testimony of A. A. Caldwell, for Defendant.]

A. A. CALDWELL, called on behalf of the defendant, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. TRIPPET.)

Q. What is your name? A. A. A. Caldwell.

Q. What business are you in?

A. I am in the gas business, more particularly in the investment portion of it.

Q. Where do you live?

A. Here in Los Angeles.

Q. Did you go to the machine with Mr. White at the gas-plant? A. Yes, sir.

Q. Did you examine the carbon at that machine?

A. I did.

Q. Where was the carbon that you examined?

A. In the chutes above the machine, and also in the yard.

Q. What was the condition of the carbon in the chutes above the machine?

A. It was all broken up. Some *of was* dust and some was small pieces.

Q. Any whole brick? [565]

A. I don't remember seeing any. I think there were some half bricks. The larger portion was in small pieces.

(Testimony of A. A. Caldwell.)

Q. Did you go anywhere else to examine the carbon?

A. We went out into the yard where there was a large amount piled up.

Q. Where was this?

A. It was on the west side of the plant, I guess it was. It is a large yard filled with brick.

Q. Did Mr. White point out some brick to you to examine? A. Yes, sir.

Q. What condition did you find the bricks in?

A. They were very shaky. So much so that if you struck a portion of one with your foot it would simply go to powder. If you dropped it or threw it down on the ground it would not hold together at all.

Q. How many of them did you examine?

A. We walked around the yard in various places.

Q. Did you handle these bricks?

A. We handled quite a number of them.

Q. Broke them with your hand?

A. You could take them like that and they would go to powder. If you would throw them from this desk down to the floor they would go to pieces.

Q. Would all of them go to pieces?

A. I wouldn't say they would go all to pieces. Some would break up in chunks.

Q. Were you with Mr. MacGillivray and Mr. White?

A. I went down with Mr. White and Mr. MacGillivray, I think it was in the month of April. It was before I went away on my summer vacation. I think

(Testimony of A. A. Caldwell.)

it was about sixty days before that. I went away in the month of June. [566]

Cross-examination.

(By Mr. GOUDGE.)

Q. Did you ever operate a gas-plant?

A. No, sir.

Q. Ever build one?

A. I have been interested. I never have done the actual mechanical work.

Q. Have you ever seen outside of the Los Angeles Gas and Electric Company's plant, a water set in operation that used lamp-black?

A. No, sir. I never had any experience with it.

Q. Did you ever see bricks made of lamp-black except the ones that you saw or have seen at the Los Angeles Gas and Electric Corporation's plant?

A. Never outside of those, those that I have seen used for household purposes in Los Angeles.

Q. And the latter that you have seen sold for household purpose, are not in the form of those building bricks?

A. I think not. I purchased some for my own house and I don't recall the shape they are in. I mean I thought they were first, but since you asked the question I don't think they were.

Q. You recall that they are small cylinders with rounded ends? A. Yes, sir that is a fact.

Q. Have you ever seen these brick, distinguishing bricks from briquets—a brick about the size and shape of a building brick—before you went down to the plant in April?

(Testimony of A. A. Caldwell.)

A. I have seen the brick before I think at the Los Angeles gas plant, if I remember correctly. [567]

Q. You did not see this water-set that Mr. White was interested in, in operation, did you?

A. No, sir, I did not.

Q. Did you ever see any of these brick made or manufactured? A. No, sir, I did not.

Q. You were there examining these bricks the same time Mr. MacGillivray was?

A. Yes, sir, with Mr. White and Mr. MacGillivray.

Redirect Examination.

(By Mr. TRIPPET.)

Q. I wish you would examine that brick lying on the desk on the paper. Is that the kind of brick you examined down there in the yard?

A. I think as far as the shape is concerned, it is the same, yes, sir.

Q. How about—

A. It seems a bit shinier to me than those down in the yard. I don't know whether it is more—it is the same shape brick, but it seems shinier. Some of them were more shattered than this. I don't think the brick down there were as good as this brick. It is pretty hard to tell. I don't know as a matter of fact whether they were or not. This brick has got cracks along it, and those had cracks in too. [568]

[Testimony of O. N. Guldin, for Defendant.]

O. N. GULDIN, a witness called on behalf of the defendant, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. Where do you reside?

A. Fort Wayne, Indiana.

Q. What is your business?

A. Gas engineer, President of the Western Gas Construction Company.

Q. How long have you been connected with the Western Gas Construction Company?

A. Since its organization in 1890.

Q. You have been continually its president?

A. Yes, sir.

Q. In what does that company deal, principally?

A. Gas-works apparatus.

Q. During that entire period have you or your company been constructing gas apparatus?

A. Yes, sir.

Q. Have you made any study of the art of gas manufacture? A. Yes, sir.

Q. What has been the extent of your education in that regard?

A. During that time or previous to that time?

Q. Well, during your life?

A. I graduated as a mechanical engineer in Norway in 1879. Subsequently, I took an advance course in Munich, Bavaria, in mechanical engineering. Then I arrived here in 1880 and was for two

(Testimony of O. N. Guldin.)

years and a half with the Baldwin Locomotive Works in their engineering department. In the [569] fall of 1882, I went into the gas engineering and have remained there in that branch or business ever since.

Q. Have you made any special study of the apparatus by means of which gas is manufactured in its various forms? A. Yes, sir.

Q. Have you continuously since that time devoted yourself to the manufacture and designing of such apparatus? A. I have, ever since 1882.

Q. What information did you have on which to base a guarantee in this contract?

A. The information came directly from the gas company in a communication by Mr. Luckenbach dated March 5th, in a letter which I notice is in evidence.

Q. Did you have any other information about the conditions under which it was to be operated—the character of fuel?

A. An additional letter was received from Mr. Luckenbach in reply to one from me after receiving his of March 5th, in which I had at that time been advised by him that they were using lamp-black in some oil style Springer apparatus that they had, and I asked to what depth they were able to carry it, using it in such crude form, and some other general questions which would enable me to form an idea as to the quality of the fuel as adapted to water-gas manufacture.

Q. You refer to the correspondence that is on file?

(Testimony of O. N. Guldin.)

A. Yes, sir.

Q. Did you have any samples sent you? [570]

A. Yes, sir, there were samples of the fuel sent us.

Q. In what form were they? A. In briquets.

Q. Did you have any analysis made of them?

A. Yes, sir, I had analysis made of them by our chemical department, and made a rough personal examination of it.

Q. What was the moisture content—what was the percentage of moisture?

A. It was from three to four per cent, to the best of my recollection.

Q. What was their appearance and what was their physical condition, with reference to strength?

A. Very hard and very satisfactory to me.

Q. Besides the correspondence that you had and the samples that were submitted to you, did you have any other information about the condition of the plant here under which the machines were to operate?

A. Only the usual information that satisfactory oil pressure, steam and blast would be taken care of by the gas company.

Q. Where did you get that information? From whom?

A. From whom—that was specified in the specifications that we forwarded here.

Q. Did Mr. Pederson furnish you any other information than what you got through the correspondence and through the samples? A. No.

Q. Now, I call your attention to this part of the

(Testimony of O. N. Guldin.)

carbureter which you have designated as designed to collect such dust or ash as might pass over. Is that apparatus or that feature of the machine peculiar to this style—to your make? [571]

A. It is one of my patented features.

Q. That was something that was designed and patented by you? A. Yes, sir.

Q. What was the purpose of it?

A. The purpose is to prevent ashes, which, of course, all fuel contains, by the blast to be carried over and deposited in the carbureter and thereby enables the apparatus to run a considerable longer time than otherwise could be run without stopping or clearing or replacement of the checker-brick.

Q. Isn't there any machine operated for the manufacture of water-gas that has not incident to it the flying of more or less dust and ash from the generator to the carbureter?

A. No. There will be more or less in any apparatus of that kind using any fuel that contains ash.

Q. And this particular chamber has been designed and patented by you to take care of that condition?

A. Yes, sir. And a door is provided at the bottom for the convenient removal. It might be proper, however, to state that we had previous to that designed a similar idea for the construction of the connection between the generator and the carbureter, in which there was a ball-valve, having a dust chamber, and by the turning of the flow of the gases as they left the generator and entered the carbureter, the dust was precipitated in that chamber. That was our old

(Testimony of O. N. Guldin.)

design on which I also had the patent, but subsequently we brought out this machine where the matter was further taken care of.

Q. Now, besides that feature that was constructed in this machine, what other measures in the carbureter could have been taken to collect the material flying over there?

A. There are no devices for that in the market. And I [572] don't know that there ever was until this was invented.

Q. Is there any apparatus that could have been added there to the carbureter to have taken care of more dust than this one does in that regard?

A. No.

Q. Is it incident to all operation of oil-gas apparatus where oil is used that there is more or less deposit in the carbureter?

A. Yes, sir, and that depends on the quality of the fuel used.

Q. What is done in the operation of the machine to relieve that condition?

A. The carbureter is put under what we term burning out periods which also apply to the superheater. Such periods are for the purpose of removing by combustion any coating which may have accumulated on the brick from the residuums of the oil used in gas manufacture.

Q. And is that a necessity in the operation of oil machines? A. Absolutely, yes.

Q. At what intervals?

A. That would depend on the quality of the oil

(Testimony of O. N. Guldin.)

and it also depends largely upon how the machine is used. It is not customary in the operation of water-gas apparatus to keep a machine continuously on twenty-four hours run. What I mean by that is this: That there are intervals in twenty-four hours where the machines could be cleaned. It may go one day, and the next day the gas making is off, and they turn the machine on for cleaning, as we term it. That can be done by natural draft by opening the top and drawing the air through, or, if the machine has to be cleaned in a hurry, to apply direct forced blast.

[573]

Q. When this generator was reconstructed after the second contract was made, the grate area was enlarged and the generator itself was considerably enlarged. Was the enlargement of the grate area and the construction of the partition wall between them done with any view to take care of the dust?

A. Decidedly so.

Q. Explain how that would come about?

A. The construction of the generator depends on its grate area. In other words, you can pass air slower through a large grate area than you can through a narrow one. In modern gas-making, that is, in the construction of water-gas apparatus, we are constantly aiming at forcing the machine up to the limit for every square foot of grate area we have, as a matter of economy in construction. In these contracts when they came to us there was a specific provision that provision should be made to prevent ashes and dust to be carried over excessively to the car-

(Testimony of O. N. Guldin.)

bureter. There was only one way of doing that, as there is no mechanical means by which you can do it, and that was to reduce the flow of the blast to the fuel bed to enable you to lower the height of the fuel bed and create perfect combustion without an excessive rush of air as in ordinary machines. In other words, to reduce the velocity.

Q. In order that you may operate with a reduced velocity or pressure of air blast, what is necessary with respect to the condition of the fuel?

A. It must be open, and it must have a larger grate area. [574]

Q. If the fuel had a tendency to and did pulverize or powder, and thereby close up the interstices of the fuel, what would that necessitate with respect to the air blast?

A. If it proceeds far enough, it gradually builds up the pressure under the grate as the air is admitted, and it would force the air through ports or holes or comparatively open spaces in the fuel bed, and consequently by the increased pressure that had been built up under the grate bars which could only find an outlet through such fuel openings, as you may call them, and it would create a current that would necessarily carry the dust.

Q. What effect would it have on the velocity with which the air passed through there?

A. Materially increase the velocity, but materially also, decrease the volume of air passing to the fuel beds. Let me give you an illustration. If you have a vessel and you want to fill it, and you have a two-

(Testimony of O. N. Guldin.)

inch pipe and a six-inch pipe, you can do it slower with the six-inch pipe.

Q. In order to keep the fire in the generator open as you describe it, what is necessary with respect to the form of the fuel that is fed into it?

A. The fuel must be of such form as to maintain open spaces between the individual particles. At the same time, it should not be too great, because otherwise—if, for instance you have large chunks like this, the surface attacked by the air would necessitate an enormously high fuel bed in order to fire the fuels that you receive for the carbureter and the superheater.

Q. After this test was closed and the machine shut down were you advised of certain damaged parts and defects in the machine resulting from the test by your operators?

A. Yes, sir; I was advised by the regular operating reports that there were defects that had developed.
[575]

Q. When you learned that there had been some defects appeared in the machine as the result of the operation, what did you do in that regard, if anything?

A. I instructed our representative to advise the gas company that they will be taken care of, as there were none of any material importance, nothing more than could be expected.

Q. Assuming that you have a carbureter of sufficient capacity, is it practicable to regulate the candle-power and raise it and lower it?

(Testimony of O. N. Guldin.)

A. Oh, yes, entirely.

Q. Describe in what manner it may be done.

A. Either by reducing or increasing the amount of oil injected, or increasing or decreasing the amount of steam. There are two ways. Usually it is made by directly admitting more or less oil into the carbureter, it being assumed that your generator fuel has been in a condition to produce the necessary producer-gas for the heating of the carbureter and super-heater, but I am speaking of normal conditions.

Q. Upon what does the capacity of the carbureter depend?

A. On its cubic content. The rule for that is rather arbitrary. Each company has its rule. We have our rules which our engineering department determines. It, of course, also depends on the temperature. Did you mean construction or manipulation?

Q. Manipulation.

A. That depends on the temperature of the cubic contents of the brick work as well as the surface of the arches and everything else that are exposed to the action of the oil.

Q. With your knowledge of the subject of water-gas making, assuming that this generator as it was constructed here, had a capacity for producing between two and three million feet of gas for 24 hours, what would you say about the sufficiency of [576] the capacity of that carbureter to handle sufficient oil to make a 20 candle-power gas or maintain a 20 candle-power gas?

(Testimony of O. N. Guldin.)

A. Carbureter only or carbureter and superheater?

Q. Both.

A. There is no question whatever but what they should.

Q. With your knowledge of the production of gas from various kinds of apparatus and different sizes of apparatus and your experience generally, what would you say about the capacity of the generator in this set, using lamp-black bricks of less than 10 per cent moisture, and of a substantial character as to strength, to produce between two and three million feet of gas every 24 hours?

A. With satisfactory air supply and steam supply I should say the capacity of three million feet would be a nominal one for the size of generator.

Q. In my question with respect to the capacity of the carbureter to have maintained 20 candle-power gas, I omitted to restrict the conditions to the use of not more than four and a half gallons of oil per thousand feet of gas. With that amendment to the question what would you say about the capacity of that part of the apparatus to maintain 20 candle-power gas.

A. It would be easier to maintain a capacity with lower candle-power than if the candle-power was required high. In other words, the capacity of the water-gas apparatus as we figure it is based on higher candle-power than that. Or, in other words, it is built to gasify oils in excess of the requirement of four and a half gallons of oil per thousand.

Q. In the operation of water-gas sets using gas-

(Testimony of O. N. Guldin.)

house coke or coal, does there result any ash, or rather, any deposit of any portion of the fuel through the grate bars into the ash pit?

A. It does when you clean the fire. [577]

Q. What is done with that material?

A. That is taken out—sifted from what is worthless ashes—and the coke or coal is brought up to the generator floor and recharged to the machine.

Q. By the use of lamp-black, do you know whether any similar result would take place as to deposits in the ash pit?

A. If lamp-black should crumble and go into dust there naturally would be in the cleaning considerable deposits under the grate bars.

Q. Do you know whether that material would be capable of being rebricked and be reused for fuel purposes?

A. If it was separated from the ashes, yes.

Q. Could it be separated from the ashes?

A. I am not prepared to answer that, but it could be used as carbon for boiler fuel and other places where that would not cut any figure.

Cross-examination.

(By Mr. GOUDGE.)

Q. Since that time when you speak of the original design for this type of apparatus being successfully operated it has been successfully operated with anthracite coal and with coke?

A. Yes, gas-coke as well as furnace-coke.

Q. In what way or by what dimensions is the size of a water-gas set described?

(Testimony of O. N. Guldin.)

A. By the diameter of the shells.

Q. And by the diameter of any particular shell? Which shell? [578]

A. Generally by the generator. And if one shell is different sizes—if it has two different dimensions—in which case we specify both diameters.

Q. So that a set can be described ordinarily as a ten-foot set or an eight-foot set, referring to the diameter generally of the generator?

A. And the carbureter, where you have different sizes.

Q. What is the size of the largest set made by your company and put into successful operation before the building of this set?

A. An 11-foot diameter. [579]

Q. That refers to the diameter of the generator?

A. Generator and carbureter.

Q. The diameter of the generator in this set as first built was how much? A. 13 feet.

Q. Do you know of any other set in this country with a generator as large as that? A. No, sir.

Q. Now, prior to the building of this set by your company, you never have built any set designed for the use of lamp-black for fuel? A. No, sir.

Q. I call your attention to a letter of December 16, Mr. Guldlin, marked Plaintiff's Exhibit 6. Do you recall writing that letter or causing it to be written?

A. No, that was written by my chief engineer. [580]

Q. Did you know of it?

A. Yes, I knew of it generally.

(Testimony of O. N. Guldin.)

Q. I call your attention particularly to this sentence on the last page of the letter: "The use of lamp-black as a fuel for water-gas machines was and is an absolutely new experience to us." That was a correct statement at that time?

A. That was a correct statement at that time. What date was that?

Q. December 16, 1907.

A. Well, I won't say that it was a new experience at that time, but that was after the plant was put in operation. Wasn't there a complaint there about the enormous amount of moisture in the brick furnished for the temporary operation? I presume that is the reason he refers to it, because he wanted to be polite.

Q. I will read the whole paragraph and ask you to say whether this was a mere polite phrase or whether it represented a fact: "It is not our intention or desire to take advantage of any wording of the contract or any technical points to evade responsibility for the operation and results of this machine, but in simple justice to ourselves, we must insist that the conditions of the terms of the contract shall be met by you as well as by ourselves. The use of lamp-black as a fuel for water-gas machines was and is an absolutely new experience to us."

A. Yes, sir, but that was referring to a previous statement as to the quality of the fuel furnished by your company that caused this letter to be written. I don't remember, but I think that must be it. Does it not refer to some complaint about fuel or something?

(Testimony of O. N. Guldin.)

Q. Yes, he is complaining of the fuel. That is, the form in which the fuel is furnished. [581]

A. And about the moisture?

Q. Yes.

A. What does he say about the moisture?

Q. He says: "It was specifically stated that our guarantees were placed upon 'dry lamp-black' or lamp-black containing not more than 10 per cent moisture. Lamp-black briquets furnished us at the time of this contract for our inspection were analysed and were found to contain an average of less than 3 per cent of moisture. Instead of the fuel which we had every reason to believe would be supplied and which was specifically mentioned in the terms of our contract, we find that the fuel from which we are expecting to make our guarantees good contains 35 per cent to more than 40 per cent by weight of moisture."

A. That was an entirely new experience. We had never attempted any fuel with 30 or 40 per cent moisture in a water-gas apparatus. That would be an impossibility.

Q. Had you ever attempted the operation of a water-gas set with the use of lamp-black of any kind prior to the operation of this first machine?

A. No, sir. I beg your pardon. If I had ever done it myself, or if I had seen? I want to get that answer straight, because I had seen it.

(The question is read by the reporter.)

A. No.

Q. (The COURT.) That letter is December, 1907.

(Testimony of O. N. Guldin.)

A. (Mr. GOUDGE.) Yes, sir, December 16, 1907.

Q. You referred in your direct testimony to a letter dated March 5th, addressed to your company by Mr. Luckenbach which you say contained the information that you had with reference to the fuel, that this set was to be designed to use. I show you this letter which is marked Exhibit 2, and ask you if that is a copy of the letter that you refer to? [582]

A. As far as I am able to say, that is a correct copy.

Q. Now, at that time, that is, at the date of this letter, you recall that Mr. Pederson was here in Los Angeles?

A. Previous to that time, I judge, for the reason that the date of our first specifications sent here was February 5th, I think, and he must have been here to present those, as well as drawings.

Q. And did you not have some report from Mr. Pederson in regard to the requirements of the gas company?

A. Yes, there was some general conversation as to the size of the apparatus, and that the matter was up for negotiation.

Q. And also some information from Mr. Pederson communicated to you concerning the fuel that they were going to use?

A. That was the same information as incorporated in Mr. Luckenbach's communication. That it would be lamp-black dried to 10 per cent, and then briqueted or bricked.

The COURT.—Is that information contained in

(Testimony of O. N. Guldin.)
any of the correspondence?

Mr. GOUDGE.—This letter that I have asked the witness to identify and he has identified. In order that there may be no misunderstanding, I will read the letter. (Reads letter.)

A. That is the letter on which the guaranty was based.

Q. In answer to that letter of March 5, 1907, you wrote this letter of March 11, 1907, marked Plaintiff's Exhibit 3?

A. Yes, that expresses the answer. That letter was written after we had received the information.

Q. And was written in reply to the letter of the 5th, and it was also written after you had heard from Mr. Pederson?

A. That I could not state, unless it says so. Does it say that we heard from Mr. Pederson? We undoubtedly had the same information that we had from Mr. Luckenbach, that that is [583] the way they were going to prepare the fuel.

Q. I notice this one paragraph says, "We have not as yet received from our Mr. Pederson information on the subject of your special fuel and we have wired him today for same."

A. Yes, it might be that way.

Q. In this letter you say, "We are rather surprised, however, to note your statement that you can take this lamp-black in large lumps from a sun-dried pile and use the same in generator, as writer would hardly believe the *fuel be* compact enough to retain its shape in a deep fuel bed by having merely been

(Testimony of O. N. Guldin.)

sun-dried. Will you kindly advise us what depth of fuel bed you have been able to handle in your generator with the fuel in this condition?" And in answer to that you received, did you not, a letter from Mr. Luckenbach dated March 19, 1907, of which this Plaintiff's Exhibit 4 is a copy?

A. Yes, it is a reply to my letter in which I answered his previous letter, in which he stated the method of manufacture to be adopted as to lamp-black, and he repeated again in this letter asking the guarantee, by giving the number of pounds of carbon from oil-gas manufacture, containing 5 per cent moisture.

Q. And in this letter also he gave you the depth of the fuel bed they were using or able to use with this lump lamp-black?

A. Yes, it is the raw material in a sun-dried form.

Q. And it was upon that suggestion that you made your design and subsequent guaranty?

A. Yes, sir.

Q. You have stated that you had not prior to this time built any set for the use of lamp-black as fuel. Had you prior to that time built any set as large as this set?

A. No, the largest set we have built is either 11 foot [584] or 11 foot, 6, for coke. That is as far as I know the largest size we have ever built of that type of apparatus.

Q. (By the COURT.) And this is 13 feet?

A. 13 feet in the generator, 12 foot 6 in the carbureter and 12 feet in the superheater.

(Testimony of O. N. Guldin.)

Q. (By Mr. GOUDGE.) This particular one in the generator is 13 feet one way and how much the other? A. Twenty feet.

Q. And the largest previous to that was 11 feet in circular form?

A. That was outside dimensions you understand.

Q. In both cases outside?

A. Because the lining comes off.

Q. In both cases you refer to outside dimensions?

A. Yes.

Q. Subsequent to the construction of this set have you built any other set for the use of lamp-black as fuel? A. No.

Q. Now, you speak of this chamber in the carbureter for the collection of dust being a patented feature and one designed by yourself or by your company.

A. Did you say the checker-brick?

Q. The chamber. A. Yes, sir.

Q. That was not designed for lamp-black as fuel, but any fuel designed for gas-making?

A. It was designed before lamp-black was ever thought of.

Q. And it is a necessary evil in the manufacture of water-gas from any fuel that some dust or fine material is liable to be carried over into the carbureter? A. Any fuel that has ashes.

Q. And all fuel that you use has some ashes, hasn't it? [585] A. Yes, sir.

Q. Do you recall that the report of the operation of this set as first designed and installed indicated

(Testimony of O. N. Guldin.)

that the means for collecting and removing the dust carried over from the generator into the carbureter were not quite adequate? A. I do not.

Q. Then, how did it happen that in the supplemental contract among the changes that you said you desired to make was the provision for more ample means for collection and removal of the fine materials carried from the generator to the carbureter?

A. That is a clause in the contract prepared here—as the contract was prepared here—as it was received by us.

Q. I will read you the language: "Provide ample means for the collection and easy removal of dust and fine carbon carried from the generator to the carbureter." Was it not reported to you by some representative of your company here that the means theretofore existing were not entirely ample or sufficient?

A. It was reported that in the handling of fuel as provided by your method of hoisting and so forth that the fuel had more dust than anthracite coal or coke, and that it was deemed advisable to make additional provisions to take care of it.

Q. And that report was made to you at the time or prior to the time when this supplemental contract was sent to the head office, was it not?

A. I should imagine it must have been. This is the first information we had of specific provisions for it. And that was taken care of, as I explained in my direct examination, by a preventive.

Q. What were the ample means that you provided

(Testimony of O. N. Guldin.)

or intended to provide in the set as changed—this new set or this [586] modified set made under the supplemental contract?

A. It was taken care of on the line of attaining the end without specifically attempting to build an attachment to the carbureter. In other words, in the reconstruction of the generator we knew that by materially increasing the great area we would reduce the necessary flow of air through the fuel bed, which would have a direct effect of not carrying any excessive amount of dust over.

Q. Let me state it this way, Mr. Guldlin; I ask you if I correctly represent it: Instead, then, of providing additional or different means for the removal of dust or fine material carried from the generator into the carbureter, you adopted the method of preventing the fine material going over into the carbureter? A. Under normal conditions?

Q. And you accomplished that by reducing the air pressure—the relative air pressure?

A. By increasing the volume or decreasing the pressure.

Q. And so reducing the air pressure. So that there was a less strong draft—and less ability for it to carry the fine material over?

A. Yes, if the fuel bed was in normal condition, that would be so.

Q. (By the COURT.) That was accomplished by increasing what you call the grate area?

A. Yes, sir, if the fuel bed had been in normal condition the increased grate area would not neces-

(Testimony of O. N. Guldin.)

sitate an increased velocity of the blast.

Q. That is, you simply enlarged the grate area?

A. Yes, sir.

Q. That was the means? A. Yes, sir. [587]

Q. (By Mr. GOUDGE.) In these questions respecting the purpose of the enlargement of the grate area—in these questions that I asked referring to the object of the increase in grate area when this apparatus was modified, and the purpose and intention in the diminution of the air pressure of the blast, we will assume that the fuel bed is in proper condition in both cases, so as to eliminate that factor; then I understand that the change in the construction of this generator by which the grate area was enlarged, this division being put in, the design was to diminish the pressure of the blast by increasing the area of the grate for the same volume of air passing through it?

A. No; your volume would increase and your pressure might decrease, passing through the fire with increased grate area. That was a manipulation of the valve. You can have any pressure behind that valve. The volume is regulated by turning that pressure in the opening of the valve. But the speed of that air through the grate depends on the grate area. In other words, if the grate is twice as large the speed of the air admitted under the grate will be only one-half.

Q. Assuming the same amount of air passing through?

(Testimony of O. N. Guldin.)

A. Assuming the same amount of air passing through.

Q. So that the idea in making this change in the generator was to diminish the speed by increasing the size of the grate through which the same quantity of air would pass? A. Yes.

Q. And in that way you would have less tendency in the draft to carry over the fine material?

A. Yes.

Q. Did you have anything to do with this new design involved in this *increase grate area and diminution of the velocity of the blast?* [588]

A. Yes, sir, I was in constant touch with it in our engineering department in Fort Wayne. We prepared the drawings there and sent them out here.

Q. And your design was based upon the reports that you had as to the operation of the old plant or the first plant?

A. Yes, and the stipulation in your contract.

Q. You had acquired experience in how the plant worked?

A. In a general way. I had not been there.

Q. I mean by report you had acquired experience?

A. Yes, my judgment as an engineer.

Q. And your judgment was based upon the reports you had from your representative here as to the manner in which the former set worked?

A. Yes, with the fuel they had here.

Q. Before passing from that, in connection with this change in the size of the generator, the size or

(Testimony of O. N. Guldin.)

the amount of grate area, of course you had to take into account and did take into account the volume and velocity of blast of the air furnished?

A. Yes, sir.

Q. Now, you said that it was not usual in the operation of water-gas sets to run them continuously twenty-four hours a day?

A. That is not the usual practice, no, in the east.

Q. How many hours each day is it customary to operate such a set?

A. From twelve to sixteen and eighteen, depending upon the manufacture of gas required at the station.

Q. Sometimes twenty?

A. Sometimes twenty. They may run one or two or three days practically at full blast. It is governed by the storage capacity of the gas in the manufacture for the station, [589] and the consumption for the day.

Q. Now, considering only the operation of the set and disregarding the limitations imposed by the storage capacity, it is common to run a set sixteen or eighteen or twenty hours a day and not twenty-four, and then to use some of the hours remaining of the twenty-four for burning out?

A. That is the common practice. But that again leads to something else. It is the custom in a well managed gas-works in operating their own plants, but it has not anything to do with reaching the capacity.

Q. I am asking you only—

(Testimony of O. N. Guldin.)

A. I misunderstood, possibly, your question, but I infer that that is what you want.

Q. I asked if your custom in operating these sets and in further development of your own statement that it is not customary to run such sets for twenty-four hours a day, and that it is customary to clean them out by passing air through and burning them out— A. I refer to the practice in gas-works.

Q. And it is common to do that during some part of the twenty-four hours that is not being used for the production of gas in the set?

A. It is given attention.

Q. And the neglect to do that, to clean and burn out the carbureter, at least diminishes the efficiency of the machine?

A. It would have a tendency to do so, but it will also decrease the capacity of the machine. But in an operated gas-works the capacity of the set for twenty-four hours is not the vital factor. Economy is the important thing and to get the most efficiency. They are supposed to have plenty of capacity to do the work. It is just like you would not run an engine with a hot bearing. [590]

In expressing the opinion that this set had a capacity of three million cubic feet per day, I was figuring on a slower flow of air and slower speed of steam, consequently I would not apply the same rule that I would to a machine that I was driving at full speed, but it figures about between 20,000 and 22,000 cubic feet per square foot of grate area, which is a very conservative estimate. This estimate is

(Testimony of O. N. Guldin.)

based on my experience with any kind of fuel. I have had experience with coke, anthracite, furnace coke, and also soft coal, and my rating is based upon my experience with those fuels.

Q. In building carbureters in those sets have you any rule that determines the relation between the diameter and the height of the carbureter?

A. If I can determine it?

Q. No. Have you a rule governing your design of carbureters which has anything to do with the relation of the diameter and height of the carbureter?

A. Of course we have. That is part of our engineering knowledge that we try to guard as much as possible.

Q. Is there a general rule which governs those relations? If so, what is it?

A. Will I have to give my engineering or professional knowledge here? It is developed at considerable expense. We try to protect ourselves in our offices by even making our employees promise not to give them away. If the question is put differently probably I can answer it.

Mr. GOUDGE.—There is no objection by counsel. I don't know whether I ought to make any response to the objection of the witness or the reluctance of the witness.

The COURT.—Can you avoid it and get it without having him disclose his trade secrets? I know you don't want to do anything of that kind. [591]

Mr. GOUDGE.—No, I don't want to do any in-

(Testimony of O. N. Guldin.)

justice to the witness.

Q. I will divide the question in two, and ask you first if there is a rule followed by you in your design of gas sets which governs and determines the relation between the diameter and the height of the carbureter?

A. There is. Let me understand your question. Do you mean that that rule applies to all sizes of apparatus? All different sizes—the same rule—the same proportion between the diameter and the height?

Q. Yes. A. It does not.

Q. Then, the proportion is not the same?

A. It depends on the sizes.

Q. I say is the proportion the same?

A. No. There is a variation in that too.

Q. Let me state it this way: There is a rule governing your design in these gas sets which describes the diameter of the carbureter and that it should have been a certain height?

A. No. You are asking a general question and there should be a specific one. The oil and the material itself going into it has some effect. We come to the same question of speed as we do in the generator, if you go into it.

Q. Then, if there is no general rule it follows, does it not, that the proportion of the carbureter, that is, the proportion that the diameter bears to the height or the height to the diameter, is designed with reference not merely to one of those two factors, but also with reference to the fuel to be used and the air

(Testimony of O. N. Guldin.)

pressure to be used and the quantity of oil to be used?

A. No. The quantity of oil you would use yes, not *not* the air you are going to use. [592]

Q. Without giving your rule, state upon what factors the height and diameter or the relation of the height and diameter of the carbureter depends.

A. I think I can answer the question best by stating practical experience. It is different in our company from any other. For instance, the diameter of our carbureter is 6 inches larger than the superheater, but the height and cubic contents of our carbureter and superheater is larger than that by any other builder. Consequently, it gives a larger opportunity for handling the oil at the lowest possible temperature, and that is the feature of the machine—of being able to do so.

Q. And that is one of the factors of gas sets of your design and construction? A. Yes, sir.

Q. Other makes adopt a different size carbureter and superheater, and different proportions?

A. Yes, sir.

Q. So that is a matter of engineering opinion in the art of building gas sets what the size and proportion of the carbureter and superheater shall be?

A. Yes. My opinion on that subject is now generally adopted. The machines are being built on these lines of increased size of superheater and carbureter. It is adopted here and in England by the engineering firms.

Q. (By the COURT.) As against what method?

(Testimony of O. N. Guldin.)

A. As against older methods. They have adopted a theory that I advanced of increasing the cubic contents of the carbureter as a decided benefit. They have also adopted my system of high depth of fuel bed. These are now recognized as essential. [593]

Redirect Examination.

(By Mr. CHAPMAN.)

Q. In the operation of single water-gas sets, do they sometimes adopt twin or two generators?

A. There are other apparatus with twin generators in the east.

Q. And this generator is divided by a partition wall through the center? A. Yes, sir.

Q. It crosses the narrow part of the generator?

A. Yes, sir.

Q. So that each compartment is of about what grate area? A. About seventy square feet.

Q. How does the grate area of each compartment compare with the area of the grate of the original machine?

A. The original machine was 86 square feet, I believe. Eighty-five or eighty-six square feet. The individual grate area of these twin machines is about 16 square feet less than the original one.

Q. How does this generator shell as it is constructed in an oval shape divided into two compartments, compare with the apparatus that has twin generators? A. That would be the same.

The COURT.—What is that wall or partition that you speak of?

Mr. CHAPMAN.—You understand, this shell is of

(Testimony of O. N. Guldin.)

oval shape, twenty feet in length and thirty feet across the narrowest part of the shell. As I understand it, this partition wall is a wall of—

The COURT.—Does it extend entirely down to the grate?

Mr. CHAPMAN.—Entirely down to the grate, but only six or seven feet above the grate. [594]

The COURT.—Then the partition does not go up as high as the surface of the coal?

A. (By the WITNESS.) It is divided in two right here.

The COURT.—I understand that. It starts with the grate. Does it go to the top of the coal?

A. Oh, yes. If we had a drawing of the other side it would be clearer. This is the gas passage (pointing to it).

Q. What material is that constructed of—that partition? A. Fire brick.

Mr. CHAPMAN.—I was mistaken about it being only six feet in height?

A. Oh, yes. If you had a one-inch rule I could tell you exactly. It goes above the top of the fuel bed. It goes up about ten feet four or ten feet six. I assume that this drawing is correct.

Q. (By the COURT.) What is the thickness of the partition?

A. I think about thirteen inches. It is laid up with a brick and a half, I think. About fourteen inches.

Q. Do you know what the character of oil used in the carbureter is in the east where the custom some-

(Testimony of O. N. Guldin.)

times is of operating sixteen or eighteen hours a day, burning out the balance of the day?

A. It is a lighter oil than this.

Q. Is it of the same base?

A. No, not an asphaltum base; it is a paraffine base.

Q. Would that have anything to do with the necessity of burning out, and the extent of the deposit?

A. It would. It would not have so much deposit.

Q. Which would not? A. The eastern oils.

Q. Have you seen this photometer the gas company has at their works and used in taking the candle-power during the test? [595]

A. I didn't see any during the test.

Q. Have you seen the one that was used during that time? A. I have seen it.

Q. Do you know the principle on which it operates? A. Yes, sir.

Q. The Sugg photometer? A. Yes, sir.

Q. Can you state whether or not it would be possible to adjust that photometer so as to accurately read or show the candle-power of the oil test without some new adjustment and also show the candle-power of water-gas?

A. I cannot state any method of doing that. In my opinion it could not be done.

Q. Can you explain why?

A. Because the constituents of the two gases are different, and the constituents are of a different flame height in burning. Consequently unless it was an accidental happening of a short flame and a long flame

(Testimony of O. N. Guldin.)

that came the same way, it could not be done. It would not be reliable.

Q. Can you state the extent of the error that would appear?

A. No, that would be very difficult to say even from an analysis. The analysis would vary in one case from another.

Q. Could you say whether it would be a substantial error or not?

A. You mean if the Sugg photometer was calibrated to a twenty candle-power oil-gas what the difference would be with the same instrument measuring twenty candle-power water-gas?

Q. Yes.

A. It would be against the water-gas, and I should say at least one to one and a half candles. But as I stated, it is a matter that cannot be estimated from an analysis. It could only be done by individual calibration with a bar photometer. [596]

Q. How is the candle-power of an apparatus of this kind regulated?

A. By the admission of oil into the carbureter.

Q. In any other way?

A. Yes; you can also regulate it by increasing or diminishing the steam in the generator.

Q. And what effect does the application of more steam have upon the candle-power, what effect will that have upon the amount of gas made?

A. That will have the effect of increasing the volume, if the fire permits it.

Q. I don't know whether you understood my ques-

(Testimony of O. N. Guldin.)

tion. If you reduce the temperature of the generator by the application of more steam, what effect does that have upon the quality of gas made?

A. That would reduce the candle-power of the gas.

Q. What effect would it have upon the quantity of gas made? A. It would diminish the quantity.

Q. And if you regulate the candle-power or increase the candle-power by the application of more oil in the carbureter, what effect does that have upon the quantity of gas made?

A. That would increase the quantity by about 50 or 60 cubic feet per gallon of oil used.

Q. Then, whether or not the quantity of gas made is increased or decreased by the reduction of candle-power, depends upon the means used to regulate it, does it not? A. Yes, sir.

Q. Now, you have said that in the operation of a machine of this character it is necessary to take some time to burn out the carbureter, either each day or by laying off for a day at specified intervals or some intervals? A. Yes. [597]

Recross-examination.

(By Mr. GOUDGE.)

Q. With reference to the control of the candle-power in the operation of such a set as this, if you put more steam into the generator, assuming that you kept your fire so that you may do so, you would produce more gas of a lower candle-power?

A. If you put more steam in the generator and the generator fire is in perfect capacity, and you are not up to the capacity of the generator.

(Testimony of O. N. Guldin.)

Q. And if you put less steam in, still assuming that your fire is good, you produce less gas but of a higher candle-power? A. Yes.

Q. Now, the other way of regulating the candle-power is by putting more or less oil into the carbureter? A. Yes, sir.

Q. And you can increase the candle-power by putting in more oil? A. Yes.

Q. And doing that you would increase somewhat the amount of gas produced, at the same time?

A. Yes, sir; about 50 to 60 cubic feet per gallon of oil.

Q. Now, the limit to that is the capacity of the carbureter to take up the oil? A. And superheater.

Q. Now, suppose you crowd your carbureter and superheater beyond their capacity in the effort to raise the candle-power, what happens in the set? How is that indicated, if at all, in the results?

A. That is indicated by the surplus oil that is not gasified showing in the overflow in the seal. [598]

Q. When you say it shows in the seal, in what manner does it show?

A. In the scum on top of this seal.

Q. This seal is filled with water? A. Yes, sir.

Q. And if too much oil is put in for the capacity of the carbureter and superheater, it will be observed that the water in the seal is oily on top?

A. You mean in the overflow?

Q. Yes, there will be some skim of oil come over with the water? Is that right?

A. Yes, sir. [599]

[Testimony of B. S. Pederson, for Defendant
(Recalled).]

B. S. PEDERSON, recalled on behalf of the defendant, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. During this test was the machine operated in the way of making gas the entire 24 hours each day?

A. Yes, sir, that is, including the time of cleaning and charging.

Q. Was it making gas when you were cleaning and charging?

A. No, sir; actually operating it was about 20 hours. That is, making gas and blowing.

Q. What were you doing the other 4 hours?

A. Cleaning the fires and charging.

Q. What time would it take to clean the fires each time?

A. Approximately an hour and a half each time, sometimes a little less.

Q. How many times a day do you clean out?

A. Twice.

Q. (By the COURT.) You say while you were charging the machine was idle?

A. Yes, idle when we were charging and cleaning. It requires opening the machine and shutting down the blast.

Q. You cannot charge it without shutting down the blast?

A. You cannot charge it without shutting down the blast and opening up the machine.

(Testimony of B. S. Pederson.)

Q. (By Mr. CHAPMAN.) When you say "cleaning" do you mean cleaning the carbureter?

A. Cleaning out the fire. When you want to clean out the carbureter you must close down the plant and apply a blast to the carbureter and superheater.

[600]

Cross-examination.

(By Mr. GOUDGE.)

Q. Cleaning out and charging takes how long? Did you include both operations when you say it took an hour and a half? A. No, sir.

Q. Which takes an hour and a half?

A. The cleaning of the fire will take an hour and ten minutes and sometimes an hour and twenty or thirty minutes at each cleaning.

Q. And you do that each day? A. Yes, sir.

Q. Two or three hours would be consumed in the cleaning?

A. Yes, sir, and about an hour a day for charging or putting the fuel in the machine. And the actual operation will run from $19\frac{1}{2}$ to 20 hours a day.

Q. How often is the charging done?

A. Approximately once an hour.

Q. Then that makes four hours during which the machine is not producing gas? A. Yes, sir.

Q. Besides that there is the operation of blowing is there not, the operation called "blowing"?

A. Getting up the heat, yes.

Q. How often does that occur?

A. About half of the time.

Q. And during that time gas is not produced?

(Testimony of B. S. Pederson.)

A. No, sir, only gas for heating the balance of the machine. The commercial gas is not being made during that time to pass into the holder.

Q. (By the COURT.) What is that last operation?

A. (Mr. GOUDGE.) Blowing. Describe that? [601]

A. It is putting the blast under the fire and blowing it through the fire to bring it to an incandescent state.

Q. (By the COURT.) How often did you do that?

A. From five to six minutes, and then we make five or six minutes. We blow the machine and make for five or six minutes, that is make gas five or six minutes.

Q. That is what you mean by saying it takes half of the time to blow—half of the 19 hours?

A. Yes, sir.

Q. (By Mr. GOUDGE.) So that during the whole 24 hours, gas produced or manufactured by this set and passing into the holder is actually being manufactured and produced, say, for 9 to 10 hours each day? A. About ten hours a day; yes. [602]

Mr. CHAPMAN.—Do I understand that these bricks and samples that we have produced here and which have been identified, and the two cans of material that are unopened and have not been identified, are nevertheless deemed in evidence? We may desire to open them and refer your Honor to them simply for the purpose of comparison. We would like to have it understood that they are in evidence.

(Testimony of B. S. Pederson.)

Mr. GOUDGE.—I think there is no objection to the two bricks that were identified by Mr. White, and these two cans. As to the other bricks that were identified but not opened, we think they are not competent or relevant evidence. They were taken out at a different time. They were not part of the lot of bricks from which the fuel used in this set during the test, was taken. They have not any relation it seems to us, to the fuel that was used during the test. They may be different in the moisture content. They are made with different dies. They are made at a different time. And we don't know how many conditions may be different.

Mr. CHAPMAN.—That is all true. They are not part of the bricks that were furnished, nor are they representative of that class of bricks. They were simply taken by Mr. White for the purpose of showing the character of the bricks manufactured with the different dies, and I suppose the only pertinence they could have would be for comparison's sake.

The COURT.—I don't see that they are competent, under your statement, Mr. Chapman.

Mr. CHAPMAN.—That is about the situation. Then the others will be deemed in evidence?

The COURT.—Yes.

Mr. CHAPMAN.—We ask leave to open the cans, simply to present to the Court the character of the ash-pit as compared with the others.

Defendant rests [603]

[Testimony of J. J. McDonald, for Plaintiff (in Rebuttal).]

J. J. McDONALD, called on behalf of the plaintiff in rebuttal, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. Where do you reside?

A. 306 Echandia street.

Q. What is your occupation?

A. Foreman at the present time for the Los Angeles Gas and Electric Corporation.

Q. Foreman of what kind of work?

A. Gas manufacture.

Q. How long have you held that position?

A. Since the 1st of October, 1911.

Q. The first of this month? A. Yes, sir.

Q. What was your occupation prior to that month?

A. Gasmaker for the same company.

Q. How long had you held that position?

A. I should say about six years.

Q. What kind of gas have you been making during that time, and where?

A. Most of the time I have been making water-gas in our own sets, for the Los Angeles Gas and Electric Corporation.

Q. What material have you made water-gas from during that time?

A. Carbon pressed into brick.

Q. And when you say "carbon" what kind of carbon is that? [604]

(Testimony of J. J. McDonald.)

A. I mean good, dry carbon.

Q. And obtained from where and made how, as to the carbon?

A. Made from our own brick presses and pressed into bricks such as these that stand before me.

Q. Where does the carbon that is pressed into those bricks come from?

A. It comes from crude oil, a residuum or by-product from the manufacture of gas from oil.

Q. Were you at the gasworks in March, 1910, during the test of the water-gas set placed there by The Western Gas Construction Company, and sometimes described as set No. 4? A. Yes, sir.

Q. Did you observe the operation of that test or were you employed in any way around or about it during that time?

A. I was the operator on the test on the day run.

Q. You were the operator on this particular set?

A. Yes, on this particular set.

Q. In the water-gas that you have been accustomed to make and have made during your experience as a gasmaker for five or six years, that you speak of, was that water-gas enriched with oil by means of the carbureter? A. Yes, sir.

Q. You are familiar with that method of making water-gas? A. Yes, sir.

Q. What relation, if any, or what effect, if any, does the amount of oil that is fed into a water-gas set in the carbureter have upon the candle-power produced?

A. The more oil you run in your carbureter the

(Testimony of J. J. McDonald.)

higher the candle-power is. The less oil, the less. In other words, when you run more oil in the more deposit it will make and clog up your carbureter and stop it up. [605]

Q. The rule you have stated is the more oil you put in the carbureter the higher the candle-power. What is the limit to that, if any, and what happens—can you put in too much oil in the carbureter for efficient operation of a water-gas set? Say yes or no to that?

A. Yes.

Q. State how you can determine by the operation of the water-gas set whether you are using too much oil in the carbureter—if it manifests itself at all in the operation of the set?

A. I can tell that by looking at my seal-pot. I can see oil in the top of the water.

Q. When can you see oil in the water of the seal-pot?

A. After about two-thirds of the run. With the amount of oil that you can put into the carbureter, you see the oil in the carbureter—that the carbureter is not doing its work.

Q. That is, that there is too much oil put in the carbureter?

A. Yes, sir.

Q. Now, a day or two after this water-gas set No. 4 was being operated in its final test from March 10 to March 30, 1910, did you observe the condition of the seal-pot and the water overflowing from the seal-pot with reference to its oiliness?

A. Yes, sir.

Q. State whether at any time during that period of final test from March 10th to March 30th you saw

(Testimony of J. J. McDonald.)

any oil in the overflow from the seal-pot in this set?

A. Well, I should judge that the last ten days the machine ran, I observed oil each run in the seal-pot. That is, at the end of each run.

Q. Was the condition of the water or the overflow from the seal-pot that you say you observed during the last ten days [606] of the test run of this set, the condition that you have described as indicative of excess of oil in the carbureter? A. Yes, sir.

Q. Did you ever discuss or speak of that condition of oil coming over into the seal-pot during this test with anybody who represented or was employed by The Western Gas Construction Company?

A. I called Mr. White's attention to it several times when I was working.

Q. What did you say to him?

A. I told him that the carbureter was more or less choked up, and we were not burning the oil and I called his attention to the *oil* the seal-pot at the end of each run.

Q. What did White say?

A. Sometimes he would say it was too bad or something like that, and to do the best I could.

Q. Speaking to you? A. Yes, speaking to me.

Q. When you say that this condition was noticeable at the end of each run, what period of time do you refer to as a run?

A. We were to blow six minutes and run six minutes. We were to put in the oil five minutes, if we were burning a hundred gallons, and I should judge it was about the last two minutes of the run.

(Testimony of J. J. McDonald.)

Q. You mean at the end of each six minutes of gas production? A. Yes, sir.

Q. Did you see the fuel that was used in this water-gas set during the test run during the time I have mentioned? A. Yes, sir. [607]

Q. I call your attention to this brick which is wrapped in the paper and which has been identified by Mr. White, and ask you whether that is a fair sample of the kind of bricks that were being used in this test during the test run?

A. That is as good a brick as I have seen during my experience of handling water-gas, if not better. It is a better brick than we have used in our own water-gas set.

Q. As to this particular brick, first of all, is this representative of the kind of brick that were actually used? A. Yes, sir, the same size brick.

Q. As to texture and hardness and firmness and general appearance, it is a fair sample of the brick used in this set? A. Yes, sir.

Q. Did you see the fuel—this brick fuel—actually delivered into the set during the test run?

A. Yes, sir, I done that myself.

Q. Did you observe whether or not in the course of the delivery of the brick into the generator and during its elevation to the bin and its passage from the bin down the chute into the generator, whether it broke or any of them were broken or became broken?

A. There was a portion of them broken, but not many. They couldn't help but get broken, some of them. The bricks were in good condition,—a good dry brick.

(Testimony of J. J. McDonald.)

Q. In operating sets, you have during your experience as a water-gas set operator—not during this test but on your own sets—what has been your experience in reference to bricks breaking while they are being handled and delivered into the generator? Does that happen or does it not?

A. It sometimes happens. It depends on the rough usage of the men handling them. [608]

Q. How did the bricks that were actually used in this gas-set during the test compare with the bricks that you were accustomed to use in your sets or the sets belonging to the gas company as to hardness and as to their keeping their form while being handled in the generator?

A. These bricks are the best bricks that I ever handled in my experience in a water-gas set. That is, I am talking about No. 4 water-gas set. The brick handled there were the best bricks I have used in my experience with the Los Angeles Gas Corporation.

Q. When you say "best" you mean the best in what respect? A. They were dry brick, and solid.

Q. Now, you say the brick go down the chute to the generator? A. Yes, sir.

Q. You recall, do you, that the chute was perforated? A. Yes, sir, the chute was perforated.

Q. State what was the effect of the passage of brick and material down the chute of those perforations as to the removal of small particles of dust from the whole mass of fuel. What was the effect of these perforations in the chute upon the fuel as it went down?

(Testimony of J. J. McDonald.)

A. When once they would get to the generator, the perforations or holes would take the dirt away from going into the machine.

Q. Did it do so? A. Yes, sir.

Q. Was it part of your work while you were helping to operate this water-gas set during the final test to observe the condition of the fire in the generator?

A. Yes, sir. [609]

Q. And in operating water-gas sets during your five or six years experience with the gas company was it a part of the business of operating a set to notice the condition of the fire?

A. It is his duty at all times.

Q. What is required for the operation of a set with reference to the fire, and what is the reason for observing the condition of the fire?

A. If your fire is not in a good condition, if she is clinkered or if there is holes in it, or something like that, you don't get good results.

Q. If such a condition exists, can that be seen by the operator?

A. Yes. That is, when you open up your generator to coke up which we used to every hour in this particular set.

Q. What generally was the condition of the fire in this set at the time you observed it—opened it up and looked at the fire?

A. I should judge the fire was in good condition.

Q. How did it compare with the condition of the fire that you were accustomed to keep in the set that you operated?

(Testimony of J. J. McDonald.)

A. Something about the same, not much difference.

Mr. GOUDGE.—That is all. [610]

Cross-examination.

(By Mr. CHAPMAN.)

Q. In whose employ were you at the time you were operating the set?

A. The Los Angeles Gas and Electric Corporation.

Q. And had been operating one of their water-gas sets on the place at that time?

A. Oh, I had been previous to this set.

Q. When you took charge of this set, you closed down your other sets?

A. Yes, sir, our own water-gas set was shut down for this purpose while on the test.

Q. You acted under Mr. White during this test?

A. Yes, sir.

Q. Was he there a great part of the time?

A. He was there mostly all the time with me in the day time.

Q. Talked to you about the condition?

A. Yes, sir, quite frequently.

Q. Did you ever offer any advice as to the measures to be taken to improve conditions?

A. I didn't think it was necessary to offer advice to a man like Mr. White. He was supposed to be a high-class gasmaker. I wouldn't think it was my duty to offer him advice.

Q. Then, you mean to say that you did not offer him advice?

A. Except when he came to talk about the carbureter and there was too much oil, I called his at-

(Testimony of J. J. McDonald.)

tention to it. I never offered advice about running the machine. [611]

Q. And during the last ten days of the test you saw oil at the end of each run?

A. Yes, sir, I saw oil in the seal-pot.

Q. You didn't see any during the first few days of the test before the apparatus was shut down for recheckerizing?

A. That is, on the last test? At the end of the run I could notice a little oil. She was shut down because the carbureter was clogged up.

Q. And after it was recheckerized you did not notice any oil?

A. Not for a few days; I should judge three or four days.

Q. And then during the last ten days of the test you noticed oil in the seal at all times?

A. At the end of the run.

Q. Now, you say that condition might result from overfeeding?

A. It could not happen any other way.

Q. What is it that gasifies the oil?

A. Heat in the carbureter.

Q. And if your carbureter was not sufficiently hot, the oil would not be gasified?

A. It would be gasified to a certain extent. Most of the oil would come to your superheater and finally into the seal.

Q. So the appearance of the oil in the seal could result from something else than too great a quantity of oil in the carbureter?

(Testimony of J. J. McDonald.)

A. The only way it could result was that the carbureter was not hot enough and you were not able to burn the oil.

Q. Do you attribute the appearance of oil in the seal during the last couple of minutes of the run to the fact that more oil was fed into the carbureter than its size warranted, [612] or do you attribute it to the fact that owing to some conditions that prevailed there the heats were not sufficient?

A. I attribute it to the fact that the heat was not sufficient and that the carbureter was not able to burn the oil.

Q. On account of the fact that it was not large enough and did not have sufficient heating surface, or that the fires were not sufficient to keep the carbureter hot?

A. She didn't have heating surface. She was not able to burn the amount of oil that was put into that shell.

Q. During the first three days of the test and during three or four days following recheckering, did you put in any less quantity of oil than you did during the last ten days?

A. The first day I started up after the recheckering I put in less oil, till I got the machine up to where she could take her full capacity.

Q. That was the first day?

A. Yes, I should judge the first six or eight hours.

Q. If you had put more oil in during the first day, you would have made more gas?

A. It is not customary when you start up a new

(Testimony of J. J. McDonald.)

machine to go to work and burn her out to start with.

Q. I ask you what the fact was, whether you would have made more gas the first day if you put in more oil than you actually did?

A. It would not, because the machine was not hot enough to burn it, because we were just heating it up and burned less oil till the machine was up to the full heat to take a full run.

Q. How many gallons of oil did you put in that day as compared to subsequent days?

A. Up to about noon we burned forty or fifty or sixty gallons to a run, and in the afternoon something like a hundred [613] gallons to the run.

Q. Did you continue to burn one hundred gallons to the run almost every run thereafter?

A. Almost every run thereafter.

Q. Why didn't you put in more on the first part of the day than you did later?

A. Because the machine was not hot enough to take it.

Q. Was that your judgment of it?

A. That was the orders from Mr. White. I worked particularly under Mr. White, and done as he told me to.

Q. You say you did thereafter continue to put in a hundred gallons of oil for each run up till the end of the test?

A. Not all the way through. The last three or four days we put some oil in the generator; probably forty or fifty gallons, some runs, or twenty.

Q. Now, you have said that this carbureter in

(Testimony of J. J. McDonald.)

your judgment did not have sufficient heating surface or capacity to take care of that quantity of oil without its showing in the seal. Will you kindly explain why it was that it did not show in the seal the first six or eight or ten days run and did the last ten.

A. When the machine was recheckeder the carbureter was perfectly clear. She ran all right for two or three days and held up good, and after that when she was getting so much oil, she was naturally clogging up a little by little till the last three or four days of the test. She was not able to take her oil. It was all coming out in the generator to help out the carbureter.

Q. Then, the first three days that you ran and the next three or four days after the recheckering, the carbureter did have sufficient heating surface and was of sufficient size to have handled a hundred gallons of oil per run? [614]

A. A hundred gallons of oil per run.

Q. (By the COURT.) What do you mean "per run"?

A. That is while you are making gas.

Q. For what length of time?

A. The six minutes that you are making gas.

Q. (By Mr. CHAPMAN.) If it did take care of that much oil during a number of days, doesn't that prove that it did have capacity to handle that amount of oil? A. No, sir.

Q. And without having the capacity, it did handle it, didn't it? A. It handled it for three days.

(Testimony of J. J. McDonald.)

Q. Explain how it happens that a machine that has not the capacity to handle a hundred gallons of oil per run, nevertheless could handle it without its showing in the seal?

A. For the first three days the machine was in good condition, and the new checker-brick, you must admit, had a good fire, and you could get a good heat on it, and therefore she could take the oil to burn it. From then on the carbureter was more or less clogging up each day, which it naturally will. And towards the end she was clogged up so that I could scarcely get the blast through it.

Q. What you mean is that when the machine was clear and in good condition it did have the capacity to handle that quantity of oil, and after it became clogged it did not have. A. That is the way.

Q. Do the carbureters in your machines clog up in three days so that they cannot handle their full efficiency of oil?

A. No, sir, we run our generators for a year and then they don't clog up. They are in good condition in a year.

Q. This carbureter which did have capacity when it was in good condition, nevertheless clogged up in three days? [615]

A. Yes, sir. If we would take the sets that we have and overcrowd them, it would be just the same.

Q. If you overcharged them with oil?

A. Yes, sir.

Q. And then it immediately appears in the seal?

A. Yes, sir.

(Testimony of J. J. McDonald.)

Q. Then, isn't it true that if you did charge with oil and it did not appear in the seal, that you were not overcharging?

A. You cannot for a day or two notice it. It won't hurt the machine, apparently, for a day or two, but if you keep on it will.

Q. You can run your carbureters for a year without having them clog up? A. Yes, sir.

Q. And without even burning them out?

A. We burn them out once in a while.

Q. How often?

A. Maybe once every two weeks. Sometimes once a week or something like that. We burn them out for twelve hours and sometimes twenty-four hours.

Q. Is it not a fact that you invariably burn out the carbureter for a full day one day in every seven?

A. We have been doing it during the past year or so.

Q. No fine stuff blew over from the generator into this carbureter, was there?

A. I couldn't notice any.

Q. Wouldn't you have known if any had blown over there?

A. I couldn't notice it very well. There was a dust chamber to catch all such dust as that.

Q. And all of the deposit in the carbureter then was due to overcrowding with oil? [616]

A. Yes, sir.

Q. You saw considerable quantities of dust taken out of that chamber that was put there to catch it?

A. Yes, sir.

(Testimony of J. J. McDonald.)

Q. And considerable quantities taken out of the ash-pit too, didn't you?

A. Nothing more than we take out of our own water-gas set in proportion to the size.

Q. How is the carbureter in your sets located with reference to the generator? Is it the same as this?

A. Our sets are straight shot—one-piece sets.

Q. Then, when you are blowing through the fire in the blow period, you blow through the carbureter from the bottom?

A. Yes, sir, in a one-piece set you blow through your fire into the checker-brick and out through the top of the machine.

Q. And what in your machine have you devised to catch this fine stuff that flies over?

A. We ain't got none.

Q. And you use the same kind of fuel that was used in this machine?

A. Yes, sir. The only trouble is the fuel we use in our own is not as good as was used in the No. 4 water-gas set.

Q. And still you have no dust flying over?

A. Oh, sometimes, when you blast too heavy, you probably blow a little dust. We have no means of catching it or anything like that.

Q. Did they blast too hard in this machine?

A. The trouble is she did not blast enough, the way it looked to me.

Q. Didn't put enough blast through it? [617]

A. It looked that way to me.

Q. Didn't have blasting pressure?

(Testimony of J. J. McDonald.)

A. There was sufficient pressure, but they didn't blow long enough to get up their required heat.

Q. Did you tell Mr. White that?

A. As I said before, I didn't think it was my duty to tell an expert that. I did exactly as he told me.

Q. You did not tell him? A. Not that.

Q. Did you tell Mr. White many times during the operation of that set that it was an awful shame to be served with material that they were giving you, on account of the tremendous quantity of dust that went into the carbureter?

A. No, sir; I never told him anything of the kind.

Q. Never commented on the quantity of fuel?

A. We talked of it but I always admitted that the fuel was better than we had for our sets.

Q. Didn't you tell him it was an utter impossibility to make gas with that stuff?

A. Not that I know of.

Q. What did you tell him?

A. The only thing I told Mr. White was towards the end of the test, I called attention to the carbureter getting clogged up, and also the oil in the seal-pot, saying that I couldn't get much blast through the carbureter, and my pressure gauge was on there to prove it.

Q. Most of the brick that you have used during that time or before are as good as this brick here?

A. No, sir.

Q. Not as good as what you are using at the present time?

A. These brick are better than what we are using.

(Testimony of J. J. McDonald.)

Q. You have been up in the courthouse here to examine these brick?

A. No, sir, I never was up here before. This is the first time.

Q. How can you state they are without having touched the brick? How can you sit there without having touched the brick and tell that it was better?

A. Oh, well, appearances. It looks to be a better brick.

Q. Just from the witness-stand you are able to tell from glancing at it that it was better brick than any you had? (The bricks to which the witness referred were lying upon a table under the Judge's bench, and the witness was sitting on the witness chair a distance of at least ten feet from the bricks.)

A. I should think it is, anyway.

Q. Come over here and take a look at it. Did all the brick that you used down there have those cracks that you see running through it?

A. That we are using at the present time?

Q. No, during the test?

A. No, you wouldn't say they were cracked like that all the time.

Q. Then, this is a worse brick than you had at that time?

A. I won't say it is poorer. I never looked at them so close as to see cracks or anything like that. I did not have time to pick up a brick and look at it that way. I had something else to do.

Q. You didn't pay attention to the fuel?

A. I did when it went into the generator, but I did

(Testimony of J. J. McDonald.)

not pick up the bricks to see the cracks.

Q. And were there ever bricks broke during the course of handling? A. Some of them were.

Q. Do you mean two-thirds of them?

A. No, sir, there was not.

Q. How much, about a tenth? [619]

A. I couldn't say how much.

Q. Give us an idea how many of them broke.

A. I should judge there might be one-tenth, but I couldn't observe that close.

Q. Some days it broke more than others?

A. They were just about the same all the time.

Q. You don't think that more than one-tenth of them broke?

A. There might be. As I said before I could not observe them that close.

Q. Isn't it a fact that nine-tenths of that brick before they got to the generator broke? A. No, sir.

Q. Did you ever stand there in a cloud of smoke from these bricks that were delivered there during a charge? A. Sometimes.

Q. So dense that you couldn't see?

A. I could see the brick all the time, just the same, because I made it a practice to see them for my own benefit and have the fire in good condition.

Q. How could you see them when you were in a cloud of dust?

A. When there was smoke it would go up next to the building. I was down on the floor and I could observe the brick going into the generator.

Q. Where did that cloud of dust come from?

(Testimony of J. J. McDonald.)

A. Came from the carbon when they started to burn in the generator. They would drop the bricks in and they would start to burn, and the smoke would come back to the charging doors—

Q. I am not talking about smoke; I am talking about dust. A. The dust didn't bother me. [620]

Q. You did not have any dust?

A. There was dust there but it never prevented me seeing the brick.

Q. Did you ever see any dust come through the slots in the chutes when the bricks went down?

A. Yes, I have seen dust come through these perforated holes they made there.

Q. But it did not bother you any?

A. It didn't prevent my seeing the bricks when I was charging.

Q. How about the dust on each charge? Was it about the same, or was it more one time than another?

A. Sometimes it would be more. It would depend on the size of the charge we put in the generator. Sometimes we put a light charge and sometimes a heavier charge. When the charge was heavier, the dust would be a little more.

Q. Did you ever see any waste matter accumulating there from the stuff that came through the chutes? A. Yes, I have seen waste.

Q. Considerable quantities?

A. Nothing more than we see in our water-gas sets; sometimes not as much.

Q. You had some dust in your own water-gas sets?

(Testimony of J. J. McDonald.)

As much as twelve or fifteen or twenty thousand pounds of waste? A. No, sir.

Q. Did you ever have that much accumulate in these operating sets?

A. Twenty thousand pounds in one day?

Q. Yes.

A. No, sir, not twenty thousand pounds. Of course, I didn't work on the night shift. I am talking about my own day shift that I was operating on.

[621]

Q. Did you see these records kept of the waste?

A. I didn't have nothing to do with them. My helpers took care of that.

Q. Where did that waste come from?

A. It came from the brick. It came through this perforated hole. And some of it was caused by the way the holes were put in. The bricks would slide down and the edges would have a tendency to make dust.

Q. There was some dust?

A. Yes, I admit that. You have to have some dust if you are charging at all. You will have dust.

[622]

[Testimony of V. C. Carey, for Plaintiff (in Rebuttal).]

V. C. CAREY, called on behalf of the plaintiff, in rebuttal, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. Where do you reside? A. In this city.

Q. What is your business or occupation?

(Testimony of V. C. Carey.)

A. I am with the district attorney in this city.

Q. In 1910, in the month of March, did you have anything to do with the operation of or did you observe in any manner the operation of the water-gas set installed in the works of the Los Angeles Gas and Electric Corporation by the Western Gas Construction Company?

A. I was down there during the test.

Q. For what period of time were you there at the gas-works?

A. I was there for about six months at the gas-works, altogether.

Q. Give the time—the beginning and the end of that six months.

A. Well, the last was August 1st, when I quit.

Q. What year? A. 1910.

Q. Do you know how early in the year you were there? A. Six months from that—April.

Q. Six months prior to August 1st would bring you to February 1st. Were you there during February?

A. I guess that was the 1st of February that I went to work for them.

Q. Did you ever meet Mr. White of The Western Gas Construction Company? A. Yes, sir. [623]

Q. During the final test of this apparatus in the month of March, 1910, did you have any conversation with Mr. White about the candle-power of the gas that was being produced by the set? A. Yes, sir.

Q. State when and where that conversation took place, and what the conversation was.

A. I had several talks there of it. I don't know

(Testimony of V. C. Carey.)

just exactly what day that was on, and I don't know the exact conversation. But I wrote it down at the time, and I have it in my pocket and I can read it.

Q. You made a memorandum at the time of the conversation? A. Yes, sir.

Q. You may refer to any memorandum you made at the time and use that memorandum for the purpose of refreshing your recollection, and if it does refresh your recollection, you may state what the conversation was.

Q. (By the COURT.) What did this gentleman say his business was there?

Mr. EDWARDS.—Inspector of the gas-works.

Mr. GOUDGE.—He did not say that he was working there—he did say that he was working there, but did not state what he was doing.

Q. (By Mr. GOUDGE.) Mr. Carey, state what your work was during this time that you were at the gas-works.

A. I was inspector of construction for Mr. Luckenbach.

Q. (By the COURT.) In the employ of the company? A. Yes, sir.

Mr. CHAPMAN.—May we see that memorandum before you use it?

Mr. GOUDGE.—No, not before he uses it.

The COURT.—Oh, yes. You cannot interrogate a witness if the adverse side wants to inspect it—you cannot ask him anything about it. [624]

Mr. GOUDGE.—But we are not laying the foundation to introduce a document.

(Testimony of V. C. Carey.)

The COURT.—I understand that. But it is for the purpose of refreshing his recollection, and my understanding of the rule is that you cannot ask a question of a witness about a memorandum or paper which you intend to interrogate him about without giving the opposite side an opportunity to inspect it.

Mr. GOUDGE.—I understand the rule, but I think the distinction is that if we do not ask him what the paper says—

The COURT.—Oh, that rule wouldn't do—to say that the witness should go on the stand and refresh his memory from a memorandum that the other party has not an opportunity to inspect.

Mr. GOUDGE.—Yes, they have a right afterwards.

The COURT.—I may be wrong and our practice may be wrong. But let the opposite counsel inspect the memorandum.

A. I haven't found it yet.

Mr. EDWARDS.—When he does find it, he can tear out that sheet and show it to them.

Mr. CHAPMAN.—We want to see the whole record.

Mr. GOUDGE.—Certainly they are not entitled—suppose he might have a record file and he uses one letter. They can't have the whole record.

The COURT.—Well, I don't know. If it bears on the case, why shouldn't they have an opportunity to examine?

Mr. GOUDGE.—But they cannot indulge in a fishing expedition.

(Testimony of V. C. Carey.)

The COURT.—No, but I will certainly hold that anything that he proposes to use, they can see.

Mr. GOUDGE.—Oh, yes, we are bowing to that ruling.

Mr. TRIPPET.—He seems to be reading.

Q. (By the COURT.) Are you reading anything there?

A. I am reading exactly what I wrote there.

Q. At the time of this conversation? [625]

A. Yes, sir.

Mr. GOUDGE.—Our instruction to the witness is that all the parts or any documents that he has that refers to that, he is to take out and preserve and hand to counsel.

Mr. TRIPPET.—We insist on seeing the sheets on which the thing is written.

The COURT.—Oh, yes, I do not intend to conduct your case, but it certainly would not bear a favorable aspect for you to suppress anything that he is refreshing his memory from.

Mr. GOUDGE.—We do not want to be understood as doing that. But he has here twenty-five or thirty or forty pages. He has referred to one or two. I don't know what the others are. Our point is that all the pages he refers to, he should submit to counsel, but no other things which do not refer to this matter.

The COURT.—No; if they have no connection with the matter. But I do not understand why you are objecting to this. You say you have no idea what is in there.

(Testimony of V. C. Carey.)

Mr. GOUDGE.—No, sir, I do not. I never have seen them.

The COURT.—Give them the papers that refer to this matter. For the present, do not examine except what is pointed out to you.

Mr. TRIPPET.—I want to see that whole page.

Mr. GOUDGE.—We have no objection to the whole page. We are not trying to split the page.

Mr. TRIPPET.—May it please the Court, this memorandum that he shows us, we have folded down the page and read the next page. This page is marked page 2, and it starts with "and" with a little "a," evidently showing that it is brought over from the preceding page. This relates to his being there. The whole memorandum shows that it was written up after this test and not at the time he says, on the 17th of March. The language used here indicates that the thing was written up after the test.

The COURT.—Ask him when it was written up.

[626]

Q. (By Mr. TRIPPET.) When did you write this?

A. I wrote that at the time Mr. White told me.

Q. (By the COURT.) In his presence?

A. No, sir.

Q. (By Mr. TRIPPET.) Where did you go to write this?

A. About a block and a half from where he told me.

Q. Did you go into any office? A. No, sir.

Q. Did you have this paper with you?

(Testimony of V. C. Carey.)

A. Yes, sir.

Q. What did you go there for? A. To write it.

Q. What did you go down to the gas-works for?

A. I was inspector of construction.

Q. You mean by that that you were a detective?

A. No, sir.

Q. Did you go down there to interview him?

A. No, sir.

Q. Now, you say you wrote this at that time?

A. Yes, sir.

Q. Did you write the whole two pages, the one that you showed me and the next page, at the time?

A. I don't remember.

Q. When did you write the rest of it?

A. I don't know what is on the next page—only just from what I found.

Q. When did you write this first page?

A. I don't know what it says above where I found the candle-power.

Mr. GOUDGE.—The witness should be shown the paper when he is asked about it.

The COURT.—Oh, yes, I will have it thoroughly tested. [627]

Q. (By Mr. TRIPPET.) Read those two pages and see when you wrote the two pages.

A. I wrote this all and the one above it right around from the compressor station, right when he told me the candle-power. I can't explain it.

The COURT.—That is what they want.

A. You see, I was working for the Gas and Electric Company as inspector, and I had a horse and

(Testimony of V. C. Carey.)

buggy, and I used to drive to the different places, back and forth, and when this set started or they were going to have this test, I got all I could and did all I could do around there on this No. 4, and I knew I had to put a report in on it, and I put down everything so that I could write a report. That is why I did this. But where it has other words filled in, that gives counsel the impression that I was writing up a report. I would be standing on the street corner and had this roll of paper, and I would stand there and write it, and then I would take it to the office and fill it in. But I would fill it in the next morning or the next night in a little better shape. But there are some words here that were written in afterwards, but it does not change the meaning of it at all.

Q. (By Mr. TRIPPET.) When did you write the words in after?

A. Well, for instance, here is—well, I would be writing along here and I didn't put "looking" and I put "look." See? And then I put the "ing" on it when I would have it typewritten up.

Q. Now, on this page marked 2 here, it starts out "and he said, he said, you, meaning me, can put in a word now and then and help me along some. I would ask him every day if I could do anything, but he always said he was getting along nicely and had nothing to kick about." When did you write that he said that every time?

A. Mr. White told me that right in front of the

(Testimony of V. C. Carey.)

superintendent's office, right at the hitching-post.

[628]

Q. "I would ask him every day." Did you ask him every day how he was getting along?

A. Well, that may be a little bit too strong, but I asked him a great many times.

Q. And then after you asked him every day, you wrote it down here that you had done so?

A. Well, there is some more papers in there too, and lots of little slips.

The COURT.—Let me suggest to you. You don't get the idea of counsel. You state that it was written up immediately after your interview with Mr. White. Now, in that memorandum you say that you would ask him every day or "I would ask him every day." That evidently refers to sometime back. Do you see the point?

A. I understand you.

The COURT.—That is what he is getting at. It shows that it could not be immediately after the interview, because you let your interview go back many days.

A. When I wrote that, I had asked him every day and I put all this in. I don't believe there is any more memorandums in there about my asking him every day.

The COURT.—The point counsel makes is that the last interview, the memorandum could not have been made at the time you had the interview.

A. Well, I didn't get it right. I should have said on that paper—

(Testimony of V. C. Carey.)

The COURT.—I simply wanted to call your attention. I did not think you understood the point Mr. Trippet is making. With the exception of that, the balance of it you say, was written about the time of the interview which you are undertaking to give?

A. Yes, sir.

The COURT.—Well, go on now.

Q. (By Mr. GOUDGE.) After refreshing your recollection, [629] state when and where you had any conversation with Mr. White respecting the candle-power of the gas produced in this set, and what was said at that interview.

A. On March 17th I asked Mr. White about his candle-power.

Q. Where was that? Where did you ask him?

A. Well, it was right around the set somewhere.

Q. What did you say to him and what did he say to you?

A. I asked him how about his candle-power, and he said the candle-power was all right. I told him the test was supposed to be twenty candle-power, and he says, "Oh, no; good commercial candle-power is what he was making."

Q. Was that all of that conversation on that subject?

A. He said he understood that the test called for twenty candle-power and he was trying to get it up, but we could not expect him to do everything. That he had a job on his hands and he couldn't do everything.

Q. Did you have any other conversation with Mr.

(Testimony of V. C. Carey.)

White on the subject of candle-power during this period of the test from the 10th to the 30th of March?

A. Yes, I had several conversations.

Q. State, if you can, when they occurred and where, and the substance of them.

A. I will have to refer to that. I cannot recall them. I have had several things to think about since then and I cannot call any of them hardly.

Q. You may refer to any memorandums that were made at the time.

Q. (By Mr. TRIPPET.) What is that paper that you took out of your pocket?

A. This is another report—another typewritten report on this same stuff.

Q. When did you make it? [630]

A. This was condensed afterwards. It was the report I put in covering these memoranda.

Mr. TRIPPET.—The witness is looking at it. I insist on looking at it.

A. I didn't look at it. I looked at the back here. I was very careful not to look at it.

The COURT.—There is a method by which you can get it if it bears any pertinency to this case. The court will have power and will control it.

A. On February 17th I was standing in the outside office, and Mr. White said to Mr. Millard he liked the chutes, and he was satisfied with them; that they were all right. That is before the test. Then, I talked to him right outside of the office and he told me the same thing, and he also outside stated that he was satisfied the way the corporation was

(Testimony of V. C. Carey.)

helping him along; that they were doing all they could for him, and he appreciated it.

The COURT.—Now, gentlemen, you may take that paper that the witness has. Counsel for defendant may examine that paper, if they desire.

Mr. GOUDGE.—Is your Honor referring to the second paper?

The COURT.—Yes; the paper just referred to. It may have an important bearing. I don't know. He says it is a report that covers these memoranda.

Mr. GOUDGE.—We have no objection.

Mr. EDWARDS.—We would just as soon offer it in evidence. We have never seen that file.

The COURT.—Any effort to keep back or withhold evidence from the court, necessarily leaves an unfavorable impression and I do not want to put you gentlemen in the attitude of objecting to something that you didn't know anything about.

Mr. GOUDGE.—We were more free to object because we knew nothing about it. We were relying on the technical objections [631] that we thought we had.

Adjourned until 2 o'clock P. M.

October 5, 1911, 2 o'clock P. M.

V. C. CAREY, recalled.

Cross-examination (Resumed).

Q. (By Mr. TRIPPET.) Where is that document you had this morning?

(The witness hands counsel a document.)

Mr. GOUDGE.—We have no objection to the examination of the whole of that document by coun-

(Testimony of V. C. Carey.)

sel. We would prefer that it should not all be introduced in evidence, because it only encumbers the record.

The COURT.—No, it would not be material, of course.

Q. (By Mr. TRIPPET.) When did you make this typewritten copy?

Mr. GOUDGE.—We object to that question as based on something not in evidence. There is no typewritten copy there.

Q. (By Mr. TRIPPET.) When did you make this document?

A. I don't know when I had this written up. I suppose it was April 17th, the day before it was dated. I had come in the night before, and probably gave this to the stenographer in Mr. Luckenbach's office, and he wrote it up the next day, but I am not sure.

Q. I notice on page 3 here that you have scratched out some of it.

A. You will find it duplicated there then.

Q. Where? A. Some place.

Q. The same thing duplicated?

A. I don't know just why it was scratched out. Probably I found it in two places the same.

Q. Did you leave this sheet for the purpose of writing up [632] this memorandum and fill it in at various times?

A. No, I just carried those papers in my pocket, and I would write a little bit on them and then write some more.

(Testimony of V. C. Carey.)

Q. You were employed the 1st of February by the gas company or about that time?

A. I think that was the date.

Q. Inspector of what, did you say?

A. Construction.

Q. Did you ever have any experience in constructing anything?

A. How do you mean, anything? I don't understand you.

Q. Did you ever construct any gas-works?

A. Nothing in the gas line, no, sir.

Q. Never knew anything about water-gas sets?

A. No, sir.

Q. And you remained in their employ till June?

A. Yes, sir.

Q. When you were employed, were you told that you were wanted to inspect this set? A. No, sir.

Q. That was not told you? When were you assigned to inspect this? A. I never was.

Q. Just did it of your own volition?

A. Yes, sir.

Q. How came you then to make a report on it?

A. I made reports on everything I saw around the gas and electricity and street mains, overhead wires, poles, cars and oil tanks.

Q. And everything you heard anybody say?

A. Everything; right straight along.

Q. I notice this typewritten paper here dated April 16th [633] or April 18th—that you have got on the second page of it a date "3/2/10." Is that March 2d?

(Testimony of V. C. Carey.)

A. Yes, I guess that is what it is meant for.

Q. And on February 14, 1910, you have got a report about Mr. White. Is that right?

A. Whatever is there is right.

Q. Then you did start in to inspect Mr. White on February 14th at least?

A. Well, you see I can't state. I have forgotten all that down there. I am going by the date that is there.

Q. Well, according to that you had started in on February 14th?

A. According to that; yes, sir.

Q. In this document it says on February 17th Mr. White said so and so. Did you see him on that day?

A. Yes, sir.

Q. And on February 18th? A. Yes, sir.

Q. What were you trying to find out?

A. Anything I could find out.

Q. Why? Were you instructed to?

A. No, I was not told to go to Mr. White and ask him anything. I was told to go down there and if I found out White wanted something to see that he got it.

Q. And if you found out anything against him to report it?

A. Well, if I found out something that he was doing that I thought was going to come up later, I would make a little note of it.

Q. And report it?

A. No, I wouldn't report it. I didn't make a re-

(Testimony of V. C. Carey.)

port on this set at all until just as it is on that paper.

Q. Until April 18th?

A. I didn't make a report right after the set closed for the test at all. [634]

Q. Were you instructed to gather evidence for any case? A. No, sir.

Q. At the time you went down there to see Mr. White? A. No, sir.

Q. You had no instructions to find evidence, to find out if he could prove anything? A. No, sir.

Q. I notice in this memorandum—

Mr. GOUDGE.—Will you identify the memorandum you refer to?

Mr. TRIPPET.—He says he wrote April 17th and dated it April 18th. In parenthesis it says: "You can prove this with a demonstration at the works."

A. Yes, sir.

Q. (By Mr. TRIPPET.) Then you were evidently, when you wrote that, reporting evidence, were you not?

A. No. Mr. Luckenbach asked me—I remember Mr. Luckenbach asked me—he was complaining about the bricks and the waste and the condition and fuel and how they broke up, and all that, and I talked to Mr. Luckenbach one day about that, and he says, "Write it down." But I didn't write it down and give it to Mr. Luckenbach at all. He says, "Write it down and make a note of it so we can get it when we want it." And what I said, "You can prove this at the works," it meant if he wanted to

(Testimony of V. C. Carey.)

go down there he could see what I meant by the talk that I had with him in the office.

Q. Did you have any memorandum in this pencil memorandum that you read from about the bricks?

A. Well, I made some memoranda in there referring to the bricks, because I dictated this from that.

Q. Where did you say you are employed now?

A. The District Attorney's office of Los Angeles County.

Q. Are you an attorney? A. No, sir. [635]

Q. What business are you in in the District Attorney's office?

A. I have no regular business there.

Q. You are an inspector there, are you?

A. No, sir.

Q. Just on the pay-roll? A. Yes, sir.

Q. For the purpose of being assigned to detective work? A. Not principally.

Q. Partly?

A. No—well, if there is something I can do, I do it.

Q. Were you ever a detective before you went to work for Mr. Luckenbach? A. No, sir.

Q. Or inspector of anything? A. No, sir.

Q. What did you do before that?

A. I worked for Captain Fredericks.

Q. In the District Attorney's office?

A. Yes, sir.

Q. You testified upon a conversation that you had with Mr. White and Mr. Millard. That was on February 17th, wasn't it?

(Testimony of V. C. Carey.)

A. I don't know. It says on there.

(Counsel hands memorandum back to the witness.)

A. On this paper it says February 17, 1910, talked with Mr. White.

Q. When you started in your evidence to-day you said that you didn't remember anything about this, but that you had a written memorandum of it. Is that what you testified to? A. Yes, meaning this.

Q. Meaning what? A. I can explain it. [636]

Q. All right.

A. Meaning that I cannot say right off what they are. I have forgotten them. But when I looked at this I can tell you where it was and all about it.

Q. When you took the witness-stand did you remember the conversation with Mr. White about the candle-power? A. No, sir.

Q. Didn't have anything in your mind about it?

A. No, I can't say that I recalled it at all.

Q. And did you remember about it when you saw that memorandum?

A. Yes, sir, and I remembered right where it was that we talked.

Q. When had you inspected that memorandum prior to taking the witness-stand this morning?

A. I had it in my pocket ever since the 20th of the month.

Q. That is not answering my question. When did you inspect it?

A. Off and on while I have been in the courtroom here during this case.

Q. For how many days? A. Since the 20th.

(Testimony of V. C. Carey.)

Q. And notwithstanding those frequent inspections when you took the witness-stand you did not remember the conversation with Mr. White?

A. Well, for the simple reason I didn't know you were going to come to that subject at all.

Q. Didn't you know what you were expected to testify to when you took the witness-stand?

A. No, sir.

Q. Hadn't you communicated to the attorneys in this case what you expected to testify to?

A. No, sir.

Q. Nobody else? [637] A. No, sir.

Q. Mr. Creighton and nobody else?

A. No, sir.

Q. They put you on without knowing what you were going to testify to?

A. So far as I know, other than on that report. I gave them that report and I supposed that was what it would be.

Q. You didn't know that you were going to testify about this conversation with Mr. White?

A. I didn't go and study it up and commit it to memory.

Q. That is not the question. Did you know that you were going to testify about this conversation with Mr. White when you talked about the candle-power?

A. No, I didn't know.

Q. Who made this memorandum in writing on the back of this typewritten paper that I show you?

A. I did.

Q. When did you make that?

(Testimony of V. C. Carey.)

A. One day sitting over there in the courtroom after this case was started.

Mr. TRIPPET.—That is all.

Direct Examination (Resumed).

(By Mr. GOUDGE.)

Q. Did you ever have any conversation with Mr. White with reference to the condition of the surroundings of the test or the purpose of the test of the apparatus? A. Yes, at different times.

Q. State if you can anything that Mr. White said to you or in your presence giving the date and place and the names of the persons present, concerning the conditions under which the test was being made or was to be made, referring to the test of from March 10th to March 30th, 1910.

A. Well, I can answer that by telling everything that he [638] talked to me about.

Q. Well, having any reference to that subject, you may state it all.

A. Well, he talked to me like he was satisfied with everything that was going on. He was satisfied with the chutes—that is, before they were in operation. He was satisfied with the help he had there—perfectly satisfied with the help.

Q. (By the COURT.) What date was that, Mr. Carey? A. At different dates.

Q. At different times during the progress of the test?

A. No, just before the test, and there is one or two things that happened after the test started. Here is March 2d. Mr. White said to me it was very strange

(Testimony of V. C. Carey.)

that the corporation was going to hold him down to the exact letters in the contract. He said, "I think we will make a good showing, and the corporation will come over a little and it will be all right."

Q. (By Mr. GOUDGE.) Referring to that statement that you say was made on March 2d, do you recall where that was made?

A. About the corporation coming over a little?

Q. Yes.

A. Yes, I do. It was right in front of the boiler-house.

Q. What day?

A. Well, Mr. White was dressed up that day and did not have his overalls on. He was going over to the set. It was the day they were shut down to checker. That third day. It was about the third day that the test had been going on that I talked to him.

Q. Now, referring to this conversation on the 2d of March, that you just now spoke of, do you recall that or have you any memoranda concerning it?

A. Yes, sir.

Q. What, if anything, was said at that time?

A. Well, I asked Mr. White how he felt towards the set. [639] He said, "Oh, the set couldn't make the guarantee," but that he was going to do the best he could, and he thought the corporation would come over a little bit, and he told Mr. Millard the same thing.

Q. What date was that?

A. On the 2d of March.

(Testimony of V. C. Carey.)

Q. Did Mr. White ever make any statement to you about the condition of the brick?

A. Being used in the test?

Q. Being used or to be used.

A. Well, I remember one conversation that happened after the test was started. He wanted to take the bricks less than 10 per cent moisture and change them to wet ones, and he said he thought he could do better with them.

Q. To whom did he say that? A. To me.

Q. Can you say when that was and where it was?

A. No, I couldn't say. I haven't any memorandum of that. I recall that from the question you asked me. It was after the test started.

Cross-examination.

(By Mr. TRIPPET.)

Q. What makes you remember that it was after the test started?

A. Because there was an argument—I believe Mr. White used green bricks right from the press before the test started; real green ones; carted them right from the press, if I am not mistaken. I am most sure that that is the fact.

Q. And that makes you remember that the conversation with White was after the test was started?

A. Yes, because they did pretty good.

Q. And this conversation of March 2d, you say, was a conversation about how the set would operate during the test? [640] A. Yes, sir.

Q. The test was going on? A. Yes, sir.

Q. And he told you that the test was started on

(Testimony of V. C. Carey.)

March 2d, and that he couldn't make the guarantee?

A. Yes, sir.

Q. You are as certain about that as you are of the rest of your testimony?

Mr. GOUDGE.—We object to that, if the Court please?

The COURT.—I never thought very much of that question. I do not approve of the form of it if it is objected to.

Q. (By Mr. TRIPPET.) You are sure the test was going on when he told you he didn't think he could make the guarantee?

A. He told me that twice; two or three times.

Q. You and he were great friends? He was getting very confidential with you, wasn't he?

A. No, White and I didn't seem to jibe.

Q. I thought he told you all the confidences that he had. He opened up his heart to you.

A. Well, if he told me—if that is all he had—

Q. You are sure he told you that he was satisfied that he couldn't make the guarantee?

A. Yes, sir.

Q. Two or three times?

A. Yes, two or three times he told me he couldn't make the guarantee.

Q. When was the first time he told you that?

A. A few days before the test started.

Q. When was the second time?

A. I couldn't tell you exactly.

Q. You have got the memorandum there?

A. No, sir, just the one date. [641]

(Testimony of V. C. Carey.)

Q. You have got one date of that?

A. It is on there.

Q. And it was on March 2d?

A. I suppose so. I have forgotten it till I looked at it just now.

Q. And you think he told you that before you put it down on the paper? A. Yes, lots of times.

Q. Why didn't you put it down on the paper?

A. I wasn't down inspecting all that.

Q. He asked you what you were down there for, didn't he? A. Yes, sir.

Q. He asked you if you were down there as a detective? A. No, sir.

Q. Sure of that?

A. I don't remember it if he did.

Q. Didn't Mr. White refuse to talk to you when you first went down there, and continually refuse to talk to you because you were a detective, and tell you you were? A. No, Mr. White did talk to me.

Q. And did not refuse? A. No, sir.

Q. Talked to you right along? A. Yes, sir.

Q. Told you he could not make the guarantee?

A. Yes, sir. He talked to me quite often on the second floor level there.

Q. That is the kind of a level you mean when he was talking to you on the level?

A. No, I mean on the level of the set.

Q. You are not speaking about masonry?

A. No, I am not a mason. [642]

Q. When were you up on the floor of the set?

A. I was up there pretty near every coaling dur-

(Testimony of V. C. Carey.)

ing the test. There was one or two times, possibly, that I missed.

Q. How often did they coal?

A. Well, about every hour.

Q. And you were up there pretty near every hour?

A. Yes, sir.

Q. On the floor? Did Mr. White know what you were doing around there?

A. I noticed he lots of times would snub me a little bit, but I didn't take it the way you people think—because he thought I was a detective.

Q. What was he snubbing you about?

A. Because I didn't know anything about the gas business, and he thought it was funny that I was up there on that business because I didn't know anything about gas-making.

Q. I see you have a memorandum of the former report of candle-power too high and too low at times. When did you make that?

A. Is there a date on it?

Q. No, there don't appear to be. It is right there in the middle of the page.

A. I don't know. Sometime—this is before the final test. This was when he was working the experimental test there.

Q. I notice on this—is that February 19th—this page? A. Yes.

Q. Why have you got February 18th on top of that?

A. That has nothing to do with the way it is arranged. Those papers were all scattered around.

(Testimony of V. C. Carey.)

Q. And then you picked them up and fastened them together later on? A. Yes, sir.

Q. Just any way that they came? [643]

A. Well, yes, any way they came.

Q. You say you were not assigned to this job down there? A. No, sir.

Q. Now, I notice here, "Report to cover my detail at gas-works when the Western Gas Construction Company were making tests on No. 4 water-gas set." When did you write that? That appears to be the first thing you did.

A. This should be "details." I wasn't sent down there—

Q. It all relates to this water-gas set?

A. All my work down there?

Q. All this report. A. This was all on that.

Q. Well, this report relates to the detail work—the detail of that— A. Yes, sir.

Q. Then, you were assigned to do that prior to February 17, weren't you?

A. Not especially. Nothing special about it. [644]

[**Testimony of John T. Creighton, for Plaintiff
(Recalled in Rebuttal).]**

JOHN T. CREIGHTON, recalled for plaintiff in rebuttal, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. I believe in your former testimony you stated that you had operated water-gas sets?

A. Yes, sir.

(Testimony of John T. Creighton.)

Q. For how long a period does your experience extend in that business?

A. Between oil and water-gas sets, about three or four years.

Q. Taking the water-gas sets that you have operated, where has that been?

A. Los Angeles Gas & Electric Company and Los Angeles Gas and Electric Corporation.

Q. What kind of fuel have you used in that operation? A. Lamp-black carbon.

Q. In what form?

A. We have used it in every form that it comes. Partially loose, and brick form like this brick, bricked crude, part with tar mixed with it, and we have used it in every imaginable way, from mixing sawdust with it and pressing it and making gas of it. Every imaginable thing you can think of to use with it.

Q. Have you used it in lumps as taken from the drying-pit? A. Yes.

Q. As I understand you to say, you have also used it in the loose form? [645] A. Yes.

Q. Taking the operation of manufacturing gas from carbon in lumps in crude lumps, or in loose form, state how the carbon is handled, how it is put in the generator and what becomes of it in the generator.

A. In the loose form we experimented with it a long time to see if we could not use it just in the loose, fluffy form, and we found that it packed too tight that way. So then we let it stack up in big

(Testimony of John T. Creighton.)

mounds, and we mined it just the same as you would coal by undermining it and letting the big lumps fall down and crush, and took the biggest ones—as large as a man could lift—and wheel them right up onto the working floor and shovel it right into the generator. We did that for two or three or four years, probably, before we bricked any.

Q. Speaking of the brick form, what kind of brick was it in shape or size?

A. It was in the shape and size of a fire-brick. It is a little larger than a building brick. It is the fire-brick size.

Q. How does it compare with this sample of brick which was wrapped in paper, now marked Defendant's Exhibit "I," identified by Mr. White?

A. That is the same class of brick we first made and are making now on the press that that was made.

Q. What kind of a press were those bricks—speaking of your experience with bricks—what kind of a press were they made in?

A. They were made in an ordinary brick press, a fire-brick press from one of the fire-brick manufacturers in this city. It was a press taken from one of those houses, I believe. [646]

Q. When did you install such a press in your works?

A. I believe it was in 1903, I think—'3 or '4, '2 or '3 or '4; somewhere along about that.

Q. How many such presses have you had?

A. That was the only type of that kind, with a two-mould press. We had another that was a four-

('Testimony of John T. Creighton.)

mould press that we got in about 1906 or '7, I think. That was a four-mould press, pretty much the same type. It might have been a little stronger press. It was in four moulds. You could make four bricks at a time. Those dies were changeable. You could take those dies out and make briquets—little bits of ones—but it would be the same cubical contents of the press. The press would be about the same capacity. And we tried for a long time to see how hard we could make them, and we found that we broke the presses all to pieces by trying to make them hard out of the dry stuff.

Q. Speaking of the four-mould press, is that the press that you had in 1910, at the time this test was made with the No. 4 set? A. Yes, sir.

Q. How long previous to that time had you had the same press? A. I think it was in 1906 or '7.

Q. In what press were the bricks made that were used in this water-set No. 4?

A. They were mostly made on the No. 2 press—the four-mould press.

Q. At that time did you have the two-mould press and the four-mould press? A. Yes, sir.

Q. Both in use?

A. Yes, sir. This is a brick off of the two-mould press [647] I can tell by the dies. There was just the least little difference in the shape. Unless you casually observed it you couldn't tell.

Q. Do you know anything of the stack of brick that there was on hand in the company's yard at the time the final test of the Western Gas Construction

(Testimony of John T. Creighton.)

Company's set was begun? A. Yes, sir.

Q. Where was the stock of brick located?

A. Directly across the street from the set.

Q. How much brick was there there, about?

A. Approximately about 3,000 tons.

Q. How long prior to the commencement of this test on March 10th has that brick, comprising this 3,000 tons stock been made?

A. A good many of those brick have been made probably a year before, because in the test in July, I think it was, the year previous, we kiln-dried a lot of brick. Then we had orders to get 3,000 tons on stock, and just as the test started we found out some of them were not quite down to 10 per cent, and after that test—and for that test we started kiln-drying and we kiln-dried a lot of brick then.

Q. That was when?

A. In July. I think it was in July, 1909, I think—'8 or '9. In it was 1908, I think. It was the test just previous to this last one.

Q. The test before this final test? The test the summer before this final test? Are you speaking of the run or test that was made in the summer before that?

A. It was when Mr. Cleary was out here. It was [648] 1908, I think it was. It might have been in 1909. But I forgot the date exactly.

Q. At that run of the set was there any kiln-dried brick used? A. Yes, sir.

Q. You said just now that at a previous run of this set or this set before it was altered, that you had

(Testimony of John T. Creighton.)

orders to accumulate a stock of 3,000 ton of brick?

A. Yes, sir.

Q. Can you say when that was when you were given this order to accumulate 3,000 tons?

A. I believe it is in some of the files that you have on the table.

Q. And you are not able to tell the year or date?

A. Not offhand; there is a letter in those files in the way of a report to the superintendent, that he gave me orders to get that stock of brick and see that they were down to less than 10 per cent, and I wrote him a letter as to the progress of that work.

Q. And that will fix the date? A. Yes, sir.

Q. At any rate, will you state how recently any of this stock of brick that was on hand at the time this final test was begun, from which brick were used in the final test—how recently any of that brick had been manufactured?

A. I think it was some six or eight months, and some of it was probably a year.

Q. How did that stock of brick of about 3,000 tons that was on hand when the final test began, compare in quality and appearance and any other character with this sample brick? [649]

A. That is a good average sample of carbon brick that we used then and that we manufactured.

Q. And which was furnished to this set?

A. Yes, sir, that was furnished to this set.

Q. Now, again, how does that brick compare to the bricks that you were accustomed to use in the operation of your water-gas set in the gas-works?

(Testimony of John T. Creighton.)

A. It is a fair sample. Probably a little drier. Sometimes we have them that dry, but not to a great extent. They will naturally dry themselves if they happen to get into the pile where the sun will strike them readily.

Q. Regardless of dryness, how does it compare in other character, such as density, these surface cracks and shape?

A. It is a very good average sample of the brick that we made. We call that a good brick.

Q. Now, handling brick in your water-gas set, do you find that the brick in their progress to the generator are broken, ever? A. Yes, sir.

Q. How did you ordinarily feed or deliver the brick into your generator?

A. We dumped them—loaded them into the wagon by throwing them into the wagon by hand or pitching them. Sometimes we used a pitch-fork. Then they were handled the same way out of the wagon onto wheel-barrows, and wheeled along on an iron floor, and then dumped over the same as you would coal, and then shoveled into the generator when it was time to coal up.

Q. Did you ever have occasion to inspect or observe the fires in your generators of water-gas sets when they were using this brick or carbon fuel?

A. Yes, sir. [650]

Q. Do you know what the appearance of the fire ordinarily is? A. Yes, sir.

Q. Did you ever see the fire in this set during the test? A. Yes, sir.

(Testimony of John T. Creighton.)

Q. How did the fire in this set No. 4, during the final test, in appearance and character generally compare with the fires in your water-gas set when you were using the same fuel?

A. I would say it was a good average carbon brick fire.

Q. Now, you have some experience with the making of these bricks from the loose carbon?

A. Yes, sir. I had pretty near all the experience there ever was on it, from the first time they ever tried to make them till the present day.

Q. Do you know from experience what difference it makes in the manufacture of these bricks from the loose carbon, what the moisture conditions of loose carbon are?

A. Yes, sir. I was two or three years finding that out.

Q. By what means in 1910, if by any means, did you dry the loose carbon before breaking it?

A. We used a Cummer drier to dry the carbon down to whatever moisture is feasible to brick the brick.

Q. Well, the Cummer drier dried the carbon down to any percentage that you desired?

A. Not satisfactorily. It would not. It will dry them dry, but not practically.

Q. Practically how dry will the Cummer drier make the loose carbon?

A. About 15 to 20 per cent.

Q. (By the COURT.) That is, leave 15 or 20 per cent moisture in them? [651]

(Testimony of John T. Creighton.)

A. Yes, sir; leave 15 or 20 per cent in the carbon as it comes out. If you go below that it may explode just like gunpowder. When it gets drier than that, down to say 5 or 10 per cent, you can't notice the moisture to any great extent, and the moisture will vary so great below 15 per cent without observing it that at any time after it is below 15 per cent with the 1,000 or 1,200 degrees temperature surrounding it, it is just liable to explode like the gas does. It had done it twice in our experience in the test of the machine when it was first installed.

Q. (By Mr. GOUDGE.) Now, after drying the carbon to any given or different percentages of moisture, what has been your experience with reference to the feasibility of making brick from the loose carbon, the loose carbon itself having different degrees of moisture content? State how that affects the brick-making.

A. In the brick-making part of it, they were making brick lower than 15 per cent moisture, but it breaks the presses. It busts the wheels and busts the dies. We had it break a four-inch shaft in two two or three times, on the very press that made that brick, trying to make it drier than 15 per cent moisture. It would stall the press. We had an eight-inch belt on it and put a 12-inch belt on it and ran the press to its final capacity, and it stripped the gears sometimes of the cogwheel. We then tried to see if we couldn't get a stronger press, and while we were doing that we ran this press to its limit of 15 or 20 per cent moisture and tried to keep it that way so as not to

(Testimony of John T. Creighton.)

break the press down. We always thought it would be better if we could make brick a little drier, and we gave the firm that makes these briquet presses an open order to make us a press that was strong enough and big enough, within reasonable limits—to [652] make us a press that was strong enough to press this stuff to a lower degree of moisture than what we had theretofore been able to do.

Q. Did you get any other press?

A. Yes, I was just coming to that—to state about the press that we got and explain the experience we had with it. We got a press that was built enormously strong, and we tried to brick it at a lower percentage of moisture than 15 per cent, and we broke that all to pieces.

Q. By bricking it to a moisture lower than 15 per cent, you refer to the powdered material.

A. Yes, sir.

Q. State from the experience you have gained in the operation of these presses what is the least moisture content of powdered carbon before bricking that can be used successfully in the bricking press.

A. Between 15 and 20 per cent.

Q. I want to ask your attention to these surface cracks that are particularly apparent on the sides of this brick exhibit "L"?

A. I have seen millions of those cracks.

Q. Running longitudinally along the brick?

A. Yes, sir.

Q. At what time in the manufacture of the brick do those cracks appear or develop?

(Testimony of John T. Creighton.)

A. After the stuff is put in the dies—it is fed in automatically into the dies—the dies are about two and a half times the depth of that brick, originally. They are probably that deep. And that is filled with loose stuff and the dies come down and squeeze that down, and there is some air naturally mixed with it, and the upper dies and the bottom dies take that air with it. It is pressed to such an enormous pressure that the air is compressed, and when the top dies come off again, and the bottom dies push that out, it is compressed [653] in there so tight with the compressed air—and the compressed air leaves those fissures. It mostly gets in there when you try to get them too dry. That is how we discovered the moisture necessary to brick them. That is what the men in the manufacture of the brick are governed by. We try to keep the moisture of the carbon to that extent so as to have them down to the minimum of compressed air.

Q. Is the existence of such cracks as you have pointed out on this exhibit characteristic and common in these bricks made in this brick press?

A. Yes, sir.

Q. I understand you as soon as the brick leaves the press it shows these cracks? A. Yes, sir.

Q. Can you say whether or not these cracks or such cracks as this or any of them are closed by kiln-drying? A. No, sir, they are not.

Q. No air-dried or sun-dried bricks show the same cracks? A. Sometimes.

Q. Did you observe the bricks that were used by

(Testimony of John T. Creighton.)

The Western Gas Construction Company during its final test as to their density or tensile strength and their behavior under handling? A. Yes, sir.

Q. State whether or not those brick were different in that respect or either of those respects from the common run of bricks that were commonly used in your water-gas set?

A. It was commonly known that it was as good or better brick than we ever used or ever tried to use, and the trouble that we went to to get those bricks and have them [654] fall below that moisture—it was better brick than we had ever used.

Q. Did you ever make or see made at the Los Angeles Gas and Electric Corporation's works any better or more substantial bricks than these from which the bricks used in this set were taken?

A. No, sir.

Q. From your experience in the operation of bricking-presses in the manufacture of carbon brick, will you state whether or not it is practicable or possible to make any better or stronger brick than these were?

A. It is not.

Q. Do you recall the condition of the weather during and prior to this final test, March, 1910?

A. I recall the weather in January very remarkably, because I had orders then to cover the pile of brick with some covering to protect them from the rain, and we did cover them at that time.

Q. Do you know, then, whether it was or was not raining in that month of January?

A. Yes, sir; it was raining in January. I also

(Testimony of John T. Creighton.)

recall in February while we were still trying to keep the brick dry that we had a few rains there that kept putting our fires out as fast as we lighted them to kiln-dry them.

Q. Do you know from your experience in the handling of these carbon bricks, whether or not in ordinary weather they will absorb moisture?

A. They will, to some extent.

Q. Now, you know that the bricks furnished to The Western Gas Construction Company during this test were kiln-dried or dried by means of fire?

A. Yes, sir. [655]

Q. By what other method was it possible to dry those bricks or reduce them below ten per cent moisture in that test at that time?

A. I don't know of anything else that would have dried that pile of bricks that was above 10 per cent moisture at that particular time.

Q. Do you know how such brick as these behave when they are thrown into the fuel bed of the water-gas generator, as to their retaining their form or disintegrating? A. Yes, sir.

Q. What happens to them?

A. When they first come in contact with the heat they remain in the same form and shape until they are pretty near heated through. When they get heated clear through until they become incandescent, they are very soft, very soft and any pressure on them, great pressure on them, will squash them down at that particular time.

Q. Did you see this test during the final test?

(Testimony of John T. Creighton.)

A. Yes, sir.

Q. Do you know what the effect or in what manner the overloading or overcharging of the carbureter of the water-gas set with oil effects the operation of the set, or in what manner it is observed? A. Yes, sir.

Q. How?

A. If the carbureter is overcharged with oil to any great extent you can notice it by the residue flowing out with the water in the form of oil, lighter oil.

Q. Where does that water flow from?

A. From the seal where the gas is being washed.

Q. Did you observe the overflow from the seal of this set during the final test at any time? [656]

A. Yes, sir.

Q. How often and when?

A. I would casually go up on the operating floor and ask how they were getting along. That is the point that the gasmaker always goes to, to see how the set is operating—where that comes out—and I would naturally go back there first. I could tell whether the machine was overloaded or underloaded, or whether the candle-power can be regulated any more. In fact, that is the key of the machine, to see how it is balanced.

Q. And when you went there what would you see?

A. Sometimes I would see oil there and sometimes I would not and it would be normal.

Q. Did you have any talk with anyone connected with the Western Gas Construction Company about it? A. Yes, sir.

Q. With whom? A. Mr. White.

(Testimony of John T. Creighton.)

Q. State what the conversation was.

A. "I see you are running oil out of your seal-pot." And he would say, "I don't think it is very much, do you"? And he often asked my opinion about things like that. And I would say, "I don't know what you think about it, but I think it is crowding things."

Q. Can you state about when that was in the progress of the final test?

A. It was more towards the last six or seven days of the test, I guess.

Q. Have you had any opportunity of comparison of sun-dried brick and kiln-dried brick in use for fuel in a water-gas set? A. Yes, sir. [657]

Q. Have you used both kinds? A. Yes, sir.

Q. What, if any, difference is there between those two kinds of bricks in practical use?

A. I don't know as there is any difference, so long as the brick is dry. The moisture is the only thing.

Q. (By the COURT.) Do the two presses leave the brick in the same condition after the drying has been completed?

A. I don't think an expert could tell the difference, your Honor.

Q. If you are shown two bricks or two lots of bricks, one of which is sun-dried and the other kiln-dried, from your experience with these bricks and handling them, could you pick out one from the other? A. I don't believe I could.

Q. Do you know of any way of distinguishing them?

A. I know that I couldn't. It would be a guess if I did.

(Testimony of John T. Creighton.)

Q. Upon what does the capacity of a water-gas set depend? What indicates or designates its capacity, taking the machine itself?

A. In a water-gas set it is recognized that the grate area of the generator—that is the only recognition they give with some, and with others, it is the cross-section of the carbureter as well as the grate area—the cross-section area of the carbureter as well as the grate area of the generator.

Q. And the grate area of the generator is the same thing as the horizontal cross-section inside of the generator? A. Yes, sir.

Q. Do you know from experience whether the shape of the carbureter and the manner in which the material in the [658] carbureter—in the interior of the carbureter—is arranged and, particularly, the proportion between the height and diameter have anything to do with the capacity of the carbureter?

A. Yes, it has all to do.

Q. Why is that?

A. In using crude oils for the enrichment of water-gas, unless you have a large cross-section area to take the gases as they are generated in the generator and that are coming up and passing down through the carbureter or up through the carbureter—in using the California oils—unless you have got that grate area, the California oils deposit carbon on the checker work, to the extent of the capacity of the machine. That has got to be large enough to admit the passage of those gases that come from the generator, as well as the blast when you are heating.

(Testimony of John T. Creighton.)

Q. That is, I understand you, that with California oil it is necessary that the carbureters have a certain diameter or cross-section area? A. Yes, sir.

Q. And that cannot be compensated for by having the same surface in the carbureter and making the carbureter higher?

A. No, sir. There is something like 25,000 brick in the carbureter and superheater, and the ratio there, in the small area, is trying to make too much volume in the small area in a given length of time.

Q. What is your opinion concerning the design of the carbureter and superheater in this particular set, as to the ratio that the diameter bears to the height of those two shells, whether for California oils, those two dimensions are properly proportioned or not?

A. I will say the carbureter is about 50 per cent too small in area. [659]

Q. Cross-section area?

A. Cross-section area of the carbureter. About 50 per cent too narrow.

Q. What effect does that have or did it have on the capacity of the carbureter in this set?

A. It diminishes it to that extent after it has operated one or two days or three or four. The building of the generator part is all right after it was enlarged, but the carbureter is not enlarged to take care of that part of it. They had to handle all the extra gases just the same and [660] some more too that it made itself.

Q. Did you observe the set at all before the

(Testimony of John T. Creighton.)

changes were made and converting it into twin generators? A. Yes, sir.

Q. Did you observe whether or not the carbureter and superheater were changed also at the time the change in the generator was made?

A. Was the carbureter changed?

Q. The carbureter and superheater. Were they changed?

A. No, sir. Nothing at all done to them.

Q. Then, as it stood during the final test, taking the carbureter and superheater into account, did it have a capacity of 2,000,000 cubic feet a day of finished gas for, say, in a run of 20 consecutive days, in your opinion? A. No, sir.

Q. Do you know anything about the carrying over of fine dust or fine material into the carbureter in this set? Do you know whether that happened or not?

A. Yes, sir.

Q. Does such a thing as that commonly happen in the operation of water-gas sets with carbon fuel?

A. Yes, sir.

Q. Do you know whether any of this dust or fine material reached the checker brick of the carbureter or whether it was arrested in this pit or chamber shown here?

A. It was mostly arrested—most all of it was arrested in that chamber there.

Q. In the operation of the water-gas set by the use of carbon fuel, does any material ordinarily fall into the ash-pit below the grate? A. Yes, sir. [661]

Q. What is that?

(Testimony of John T. Creighton.)

A. In cleaning the fire the unconsumed carbon will fall through as you poke the fire, running the great big slice-bars in there. We want to get it out. It is dead. We brighten up the fire just the same as you poke an ordinary fire.

Q. What other material is in the ash-pit?

A. This particular carbon or lamp-black we use, we don't get anything else but those small particles that go down to the bottom of the fires. We want to remove them to clear up the fires. Otherwise there is only a little bit of clinker that happens to be in the carbon from piling it around.

Q. Have you any experience with the effect on the productive capacity or production capacity of a gas-set of cleaning it up and starting it fresh or anew?

A. Yes, sir.

Q. State whether or not the set shows any different capacity when first started from that which develops later after it is run.

A. Yes, sir; when the generators first start up we gradually warm up to a certain heat, and we take sometimes three or four or five days or six. It is according to the size of the amount of brick that we can bring up to heat. Then the generator is primed gradually until what we call, in the gas practice, it is ready for its load. And when it is ready for its load, the first day after it takes its load is usually a greater day than any effort you can make on the set till you start over again with a clean generator. And the way we rate the capacity is the average make that it will make per day for the length of time that it

(Testimony of John T. Creighton.)

runs. Not on any one day. The capacity is the average it will make for any period. [662]

Q. You recall when this set was started on its final test on March 10, 1910? A. Yes, sir.

Q. Do you know how long before that it had been fired up?

A. I believe it had been fired up—not unless I refer to notes, I couldn't tell.

Q. Was it one day or several days?

A. Oh, it had been fired up for a month or two. It was primed about a week before this final test.

Q. Now, assuming that as shown by the evidence, this set was primed a week before and brought up to its heat and reached the proper heat on the morning of March 10th, and was run on that day, and produced 2,700,000 cubic feet of gas in that first twenty-four hours, does that production indicate the average capacity of the machine?

A. Not unless the machine was balanced, it would not. And then it wouldn't only just for that twenty-four hours. It would not indicate the capacity of the machine as a generating unit.

Q. What is the capacity of the water-gas in feet per day that you had in operation in March, 1910?

A. The individual generators?

Q. Yes, or individual sets.

A. We had two to the capacity of about 350,000 cubic feet a day. That is, an average of 350,000 feet for an indefinite period.

Q. And any others?

A. There is two other ones that have a rated capa-

(Testimony of John T. Creighton.)

city of 250,000 cubic feet a day.

Q. In stating that capacity or estimating the capacity, what account do you take of any periodical burning out? [663]

A. That is not counted at all. The rated capacity is rated for a month or two months. In our particular line it is for a year, day in and day out—for eleven months. The average capacity for eleven months would be 350,000 feet a day.

Q. Dividing the total product during the eleven months by the number of days in that number of months? A. Yes, sir.

Q. That is how you arrive at the capacity of the machine?

A. Yes, what we can depend upon for the capacity of the machine.

Q. Now, you spoke of the eleven month period. What, if any, reason is there for adopting the eleven months rather than twelve months?

A. There is one month in the year that we kill the machine entirely—take the fires out and go in and make an annual repair to the brick work.

Q. So the eleven month period is a period of continuous operation? A. Yes, sir.

Q. What, if any, time during that period of eleven months do you close the machine or interrupt the continuous process of gas-making?

A. We burn out the machine at different periods. We try to run it on the schedule so that we know that the machines are burned out. We use a fixed period so that we know then from the management

(Testimony of John T. Creighton.)

of the machines that they are actually getting burned out and never will become clogged, unknown to the manager.

Q. (By the COURT.) What is the length of those periods?

A. At the present time it is about half a day in seven. [664] Sometimes it goes as much as a day in seven. It depends on the time of the year, between winter and summer, that we want the machines to run.

Q. (By Mr. GOUDGE.) Did you notice these particular brick that were used in this set as they were delivered into the generator? A. Yes, sir.

Q. State to what extent, if at all, the brick broke up on their way to the generator in the course of delivery. In what condition the brick actually reached the inside of the generator.

A. They were dumped into the generator under conditions that I would term very favorable. They all come down bowling into the chute and rushed into the generator, and there was what we thought in the operation of our practice as ideal conditions.

Q. Did the bricks break to any extent while they were being handled and before they got into the generator? A. They broke some.

Q. Was that breaking up greater or less in extent in your experience in handling of bricks in other water-gas sets?

A. I think it was a little better. It was above the average. That is, the breaking was less than the average. And handling them as a whole, as fuel it

(Testimony of John T. Creighton.)

was way above the average of what we had in handling that class of fuel previous to this time.

Q. You say you observed this fuel after it came into this generator?

A. Just as it went in. And we have often looked at the fires through the charging hole afterwards.

[665]

Q. And was the condition of the fuel at the time it was delivered on the fire, and the condition of the fuel as you observed it actually in the fire in this generator, better or worse than the conditions of the fuel delivered into your water-gas sets in your experience?

A. It was away above the average. Away above the average.

Q. In each case, either in the delivery or after?

A. All the way through.

Q. Besides the conversation you speak of with Mr. White with reference to oil showing in the seal-pot, indicating overloading of the carbureter, do you recall any other conversations you had with Mr. White during the operations of the test concerning the fuel, or concerning any matter connected with the operations of this set?

A. Mr. White often complained that he didn't think the fuel was any good. I told Mr. White, "That is the fuel we have got to make the gas out of, and it is the fuel we always have made gas out of, and it is a better class of fuel than we ever made gas out of. And if you are having any trouble with the generator you had better look to some other causes." And he

(Testimony of John T. Creighton.)

asked me many and many times what did I think it was, that he couldn't make it. And I told him his carbureter was too small for the amount of oil that he was trying to enrich the gas with.

Q. Did Mr. White during this test tell you whether or not he had any previous experience with this carbon fuel?

A. He never had. He said he would like for me to give him any pointers I could, and to help him along as much as I could; that I had had a great deal of experience in that class of fuel, using it for water-gas.

Q. Did he say to you at any time during this test or [666] prior to the test that he had not had experience with this kind of fuel?

A. He said he had not had any experience with it at all.

Q. Now, prior to the beginning of the final test, do you recall that there was some other run made with this machine in January and February? A. Yes.

Q. Was Mr. White here then? A. Yes.

Q. Prior to the beginning of this final test, did Mr. White ever complain to you about kiln-drying the brick? A. No, sir.

Q. Do you know whether he knew that they were being kiln-dried?

A. He knew it. He often made the remark that the bricks were fine, till he commenced to fall down on his gas-make, and then he blamed the fuel.

Q. Do you know what the moisture content in this brick, this 3,000 tons, that you had accumulated for this test, was before the brick were kiln-dried in January, 1910?

(Testimony of John T. Creighton.)

A. I knew what it was quite a while before, but just how long, I don't know. We went all over the fire and had it tested, and took samples from all different parts of the piles. We took hundreds of bricks out and had them tested, and we found that all we had tested was less than ten per cent, and we thought we were all right then till the rain came on, and then we found out that we would have to haul that whole pile all over again.

Q. You refer to the brick from this same stock?

A. Yes, sir.

Q. Prior to the run, you tested them and they ran under ten per cent moisture? A. Yes, sir. [667]

Q. When was the next time you tested the same brick?

A. I would judge it was about six weeks or a month before the test.

Q. In the meantime, it had rained?

A. Constantly. It rained a terrible lot.

Q. Then what was the moisture content?

A. It was over ten per cent, but what it was I don't remember.

Q. And you have already stated that you don't know any other way of drying them except kiln-drying?

A. No, we went to work night and day, and put big crowds of men on, and hauled them all over again.

Q. Have you any knowledge or information as to the expense of drying bricks by kiln-drying?

A. It cost us—I don't know just the exact amount, but I had to turn in an estimate of what it would cost,

(Testimony of John T. Creighton.)

and, besides, what help we could use at the works. We turned in for something like a thousand dollars besides, and hauled that pile over, and there was probably five hundred dollars spent on labor at the works, night and day, to haul that pile over as quick as possible, and to keep it dry while it was raining.

Q. Have these bricks such as you have been talking of—brick in this pile and such as the brick here exhibited—or this lamp-black—has it any market value for commercial purposes?

A. Not to any great extent. We have sold some, but not to a remarkable extent, judging from the amount that we make.

Q. Do you know what is the market value of lamp-black in this city, or was in 1910?

A. No, not just exactly. [668]

Cross-examination.

(By Mr. CHAPMAN.)

Q. Do I understand you to say you have had three or four years' experience as a gas operator—as an actual gas operator, that is, it has been since you have been in the company's employ here? A. Yes, sir.

Q. What other water-gas apparatus have you operated besides these they have in these works?

A. None.

Q. Are you a gas engineer?

A. No, sir; not a graduate mechanical engineer. I am a practical gas engineer.

Q. Have you ever studied mechanical engineering in any school? A. Only in the primary school.

Q. Never went to any college where the subject was

(Testimony of John T. Creighton.)

taught? A. No, sir.

Q. And your knowledge of the subject is confined to what you have learned since you have been in the employ of the company during the last three or four years? A. Partly so, yes.

Q. What other experience have you had in the operation of water-gas apparatus?

A. Before I went to work here?

Q. None whatever.

Q. What do you mean by partly?

A. You asked if I learned all I know about water-gas manufacture in the three or four years I operated here and I said no, not all I know. I didn't learn it all right here. I meant partly that I had got information from the text-books and so forth. [669]

Q. Did you ever design a water-gas apparatus?

A. Yes, sir.

Q. For what?

A. For the manufacture of water-gas.

Q. For what company?

A. The Los Angeles Gas and Electric Corporation.

Q. Did you build any of these water-gas sets that they have down there now?

A. I didn't build them. I built them over. I remodeled them.

Q. You designed the remodeling of the apparatus?

A. Yes, sir.

Q. Upon what do you base your opinion that the carbureter in this apparatus is not sufficient in size to make the capacity of 2,000,000 feet of gas per day?

A. From the experience that I have had with Cali-

(Testimony of John T. Creighton.)

fornia oils with an asphaltum base, and the way it will carbonize and leave dust deposit on the checker brick while we are trying to burn it, to put it into a gas—as we call it, burned up—to break it up.

Q. You base your judgment upon what you have seen in actual experience at this plant?

A. Yes, sir.

Q. And upon that experience you advance the idea that the cubic contents of the apparatus has nothing to do with it, but it depends on the diameter?

A. I didn't mention the cubic contents having nothing to do with it, but the cross-section has more. The same given cubic contents, if it was arranged differently—there is 25,000 brick in there. If they had a little greater cross-section area, you would not have the trouble with the [670] thing choking to any great extent. There is enough heating surface there, but it would choke up in such a narrow space.

Q. The engineer who designed that apparatus was all right in size and cubic contents, but he didn't know enough to flatten it down?

A. I don't know whether he didn't know enough or not.

Q. But at any rate, that is his mistake?

A. I would judge that is the error in that machine for lamp-black fuel and California crude oil.

Q. You base your judgment in that regard on what you have observed and learned in your employment at this plant? A. Yes.

Q. You say in the course of your experiments with this fuel, you undertook to use the lamp-black in its

(Testimony of John T. Creighton.)

loose form? A. Yes, sir.

Q. And you abandoned that because it packed the fire too much? A. Yes, sir.

Q. What difference did that make—packing the fire?

A. It would not work as good as if it was not packed.

Q. You mean that you used it in those experiments in the loose powdered form?

A. Yes, sir; altogether loose, with no lumps whatever.

Q. And the packing of the fire was objectionable and you passed that up? A. Yes, sir.

Q. In other words, it is a necessity that an open fire be maintained in order to keep up your heat.

A. As much as it is practical to do it.

Q. Then, you tried it with lumps—mined them out of your big deposits that you piled up in the yard?

A. Yes, sir. [671]

Q. And abandoned that?

A. Partly abandoned it. We still do it sometimes yet.

Q. Don't you use bricks altogether now?

A. No, sir; not bricks altogether. We sometimes use lumps.

Q. You say you are not fixed to do that?

A. No, I said it is not the fixed rule. If we have a lot of carbon on hand, we use it in lumps. It depends on how the conditions are.

Q. But you practically use bricks altogether now?

A. Just at the present time, yes.

(Testimony of John T. Creighton.)

Q. And that is because they make a much better fire for the manufacture of gas?

A. One reason is we can dry the bricks better than the lumps, and there isn't as much moisture in the bricks as in the lumps. It is mostly on account of the moisture that we do it. Otherwise we could use the lumps. But unless you get the lumps in even shape it would not dry evenly. If you have a lump that big and another that big your moisture would not run the same. That is the only reason. Otherwise, if we could dry it—it costs us too much to break it—we would use it that way.

Q. These lumps have to stand for a certain length of time to solidify, don't they?

A. No, we used to just plow it up. We would roll it down and plow it up and then cart them right away. We have tried letting them stand to dry, but it wouldn't penetrate a great big lump to any extent. You would have a terrible area of ground to cover with them.

Q: You say you made strenuous and frequent efforts to procure a machine strong enough to brick this stuff dry or, [672] I believe, with a lower per cent of moisture? A. Yes, sir.

Q. And you found it impracticable because it required more power than your machine would stand?

A. Yes, sir.

Q. Why were you so anxious to brick it with less than 15 per cent moisture, or 20?

A. We thought we could make a brick that would be more durable for handling if it was bricked with

(Testimony of John T. Creighton.)

less moisture in it. And we thought that brick made with less moisture in it, it would not have to lay around. It costs money to stack this stuff up, thousand and thousands of dollars, waiting to dry out.

Q. And you knew that drying out the moisture after it was bricked had a bad effect on the substantiality of the brick? A. No, sir.

Q. You think driving the moisture out after it is bricked don't hurt it? A. No, sir.

Q. Does it improve it?

A. I personally think so myself, and there is a good many people down there think so.

Q. Do you know what the specific gravity of carbon is?

A. I don't know exactly. Pretty close to water.

Q. Don't you know the weight of carbon is nearly twice that of water? A. No, sir.

Q. Don't you know the specific gravity of carbon is between one and a half and two? A. No, sir.

Q. Did you ever look it up or ask anybody?

A. Yes, I looked it up. [673]

Q. And you think carbon weighs about the same as water?

A. Yes, sir; that is, this lamp-black that we get.

Q. Do you know when you have 20 per cent water in a brick you have at least 20 per cent of the space of that brick occupied by water? A. Yes, sir.

Q. And if the specific gravity of carbon is greater than that of water, then if you have 20 per cent by weight of water it occupies more than 20 per cent of the volume of the brick?

(Testimony of John T. Creighton.)

A. It would occupy the space after you drive off the water—it would occupy the space that held the water. The space that the water held would be void to some extent.

Q. When you drive the water out of the brick, what have you in its place?

A. A void between the small molecules of carbon.

Q. When you drive the water out and have voids in its place, you think the brick is as good as before?

A. Yes, sir.

Q. And you think a brick with voids in it of 20 or 30 per cent, depending on the quantity of water after it has been driven out, is just as good as one that has not those voids in it, by reason of having been bricked with less water? A. Yes, sir.

Q. You think the voids have tendency to harden the brick in some way? A. In some way, yes.

Q. Your theory is the more porous a brick is the stronger it is?

A. No, sir. There is a limitation to the porousness of anything. At the same time, you get two things together [674] that will hold, and you can't pull them apart, although there may have been something there before.

Q. And the voids then cut no figure?

A. They wouldn't cut any figure in the physical strength of the carbon brick or briquet.

Q. This material has in it a binder, has it not?

A. Not to any great extent. The water is the binder that we depend upon, the moisture.

Q. And if you drive the moisture out by air-dry-

(Testimony of John T. Creighton.)

ing, then that binds the brick?

A. Just exactly what it is I am not able to state, only from the experience of physically testing the thing and using judgment on them.

Q. Some unseen mysterious power still causes the brick to adhere?

A. I don't think it is mysterious. It is known to some extent. It is a fact there, and it is a great deal like cement. When you once cement and mould a block of it, the water has to dry out just the same, but the cement gets harder. Mud will do the same thing. If you get a mud ball, and the mud is all pliable, yet you can put it in the sun and let it dry, and if it is adobe mud, you can throw it against the wall and it won't break. But you couldn't do it before that, to make that stick together. It is just as mysterious.

Q. It is not because of any sticky or adhesive substance in the mud?

A. I don't think so; no, sir. I think it is just combining the parts of earth together.

Q. You know there is a percentage of anywhere from 12 to 15 or 16 per cent of hydro-carbons, or tar, or tarry substance in this—

A. Not in all of it—that varies sometimes. [675]

Q. But in all the material there is more or less of this tarry substance? A. There is; yes.

Q. And that tarry substance you think has nothing to do with the binding properties of the material?

A. Absolutely none, any more than, for illustration, when it snows and it is freezing, you try to

(Testimony of John T. Creighton.)

make a hard snowball out of light snow and you can't make one. If the weather is damp you can make as hard a snowball as you want, and it is the same material.

Q. So you make fires and drive out the volatile hydro-carbon matters, and not affect them in any way. A. No, sir.

Q. Could you do that with a snow-ball or do you think the same principle would apply?

A. No. They are two different things. The material is different. I was only illustrating, as far as the moisture of the binder is concerned. That is all I was trying to illustrate. In brick manufacture of any description, the moisture enters into the question. They temper the clay with water in all brick manufactories of any description, mostly, and we found that we had to follow pretty much in the same science.

Q. Why did you make such a tremendous effort to brick it dry?

A. To save the enormous cost of stacking it up to dry if we could get the water out before. It covers a great space.

Q. Doesn't it cost you money to dry it now?

A. Not nearly so much as the value of the ground and the rehandling it. [676]

Q. You have to handle the apparatus?

A. In the mechanical drier it is handled in the machine in a small space.

Q. And you have to have fires to dry the moisture out? A. Just the same.

(Testimony of John T. Creighton.)

Q. And after it comes out you have to pile it up?

A. We could use it immediately.

Q. You have got thousands and thousands of tons of bricks lying out in that space across the street now, have you not? A. Yes, sir.

Q. It is all open and the rain falls on it?

A. Yes, sir; we have some of it under a shed. In the summer time, we take it out of there, and in the winter time we try to keep them under the shed.

Q. The greater part is open—

A. Which is because the greater part of our sunshine is the best part of it.

Q. How long do you have to dry them?

A. It depends on the moisture. Some made with 15 or 16 or 17, and some made of 20, it takes two or three months to dry them down. A good deal depends on the humidity of the weather.

Q. When did you form the opinion that this set could not make 2,000,000 feet of gas per day on account of the carbureter being improperly arranged?

A. All the time that it was there.

Q. Didn't you testify when you were on the stand the last time that you might have told Mr. White that you thought you would be making two and a half million feet with it in a month if it was accepted?

A. No, sir. [677]

Q. You didn't say that you might have said that?

A. No, sir.

Q. What did you say?

A. I said Mr. Pederson, as I found out afterwards, made that remark to me, stating that he hoped "You

(Testimony of John T. Creighton.)

fellows will do it after we get out of here."

Q. And you said, "Well, I may be able to?"

A. I might have said I might have been able to, yes, but not in the condition that the machine was in then. Of course, we would have to make some changes.

Q. You mean you could take the machine and build a new carbureter?

A. Make it over, yes, sir.

Q. Do you mean to say that some of these bricks used in that machine were double kiln-dried, or once in July and another time later? A. Yes, sir.

Q. Built fires under them twice? A. Yes, sir.

Q. Were they covered up from July till the test?

A. In wet weather they were partly so. Some of them were and some were not. We got them over into another pile and mixed them together. Part was kiln-dried previously and part we kept on making and added to the pile. There was no particular segregation of what was kiln-dried and what had been sun-dried. They were all piled together.

Q. And some were covered up and some not covered up?

A. They were covered up when it was raining.

Q. And still the water got into them and soaked them? A. Some of them, yes; not all of them.

Q. Didn't you testify that all of them were kiln-dried?

A. No, sir, not all of them were kiln-dried. [678]

Q. Didn't you build fires around all the brick?

(Testimony of John T. Creighton.)

A. Well, we stripped the fires first. We stripped all we could.

Q. What do you mean by stripping?

A. Taking the brick that had been outside and found not to be down to ten per cent moisture, and the brick that had been down to ten per cent moisture we segregated them partly.

Q. What did you do with them?

A. We gave the bricks with less than 10 per cent moisture to Mr. White to practice on and make gas. He practiced on a lot of them—the sun-dried brick.

Q. When was it that you undertook to purchase a machine strong enough to brick this stuff dry? Before or since the test?

A. I believe we were negotiating for it at that time. I won't be sure.

Q. When was it that you made the experiment that you speak of with the strong press? Was it recently?

A. Well, mostly within about a year or a year and a half ago.

Q. What did you do with the waste material that is now used in your water-gas set that results from handling this material?

A. We throw it in the dump. If there is very much big stuff comes out, we might pick it up—a few wheel-barrow loads—and throw it back in again.

Q. Where is the dump?

A. Over on the other side of the Los Angeles River, northeast of the plant.

Q. Who hauls that?

(Testimony of John T. Creighton.)

A. The wagons employed by us hauls it away.

Q. How often? [679]

A. Every day.

Q. How many wagon-loads a day?

A. I couldn't state how many a day. I would judge there is eight or ten or twelve or something like that. Five or six wagon-loads every time the fires are cleaned.

Q. Who hauls it?

A. The teamsters employed by us, in the wagons.

Q. Is that the material that is shaken out in handling or the material that comes out from under the grates?

A. The material that comes out under the grates we call ashes.

Q. You think this machine was primed for a week or more before the test started? A. Yes, sir.

Q. Don't you know that Mr. White was working inside of the machine and outside of the machine right up to the day before the test was started?

A. He was putting on an extra blast pipe around there, but that didn't keep his attention from priming the machine and getting it ready. They were working at that, and that didn't interfere with them materially, only for a day or two.

Q. You think he was attending to the fires all the time? A. Yes, sir.

Q. How do you know that? A. I saw him.

Q. Have you a record of the test of this brick pile before it rained, when you say there was less than 10 per cent moisture? A. I haven't got it.

(Testimony of John T. Creighton.)

Q. Who has it? A. The chemist. [680]

Q. You say you tested hundreds and hundreds of bricks from the pile? A. Yes, sir.

Q. And a record was kept? A. Yes, sir.

Q. Can you produce it?

A. I can't produce it personally. I believe the chemist can produce it.

Q. Did I understand you to say that you have no way of disposing of this carbon to any profitable extent? A. No, sir; only to throw it in the dump.

Q. I am referring to the material—the lamp-black—after being bricked or briqueted. Was that the statement that you made here that you had no way of disposing of it, when you were asked the value of it?

A. No way, except to use it at the plant, do you mean?

Q. Yes, sir.

A. We have no way of to any great extent. Yes, that is the statement I made—in proportion to the amount I made.

Q. You meant you couldn't find a market for the large quantity that you produced? A. No, sir.

Q. And can't you dispose of it profitably?

A. No, sir, cannot dispose of it profitably.

[**Testimony of F. S. Wade, for Plaintiff (Recalled in Rebuttal).]**

F. S. WADE, recalled on behalf of plaintiff in rebuttal, testified as follows:

(By Mr. GOUDGE.)

Q. Do you know of these carbon bricks that were accumulated by the gas company prior to the final

(Testimony of F. S. Wade.)

test of this water-gas set of The Western Gas Construction Company?

A. I do. I have examined those bricks a number of times and made tests of them. [681]

Q. Do you know whether that stock of brick was on hand in the yards in the year, 1909?

A. In the fall of 1909.

Q. Did you at that time make any test of those bricks for the moisture content?

A. I made tests of those bricks the 1st of every month at that time, and later in the fall I made some special tests.

Q. Do you know how early, or how long prior to the test in March, 1910, you made any examination of this lot of brick for moisture?

A. I believe I made some tests as early as October, 1909.

Q. And what moisture content did they show then?

A. The moisture content was at one time as low as 12 per cent, as reported on the monthly report of the carbon on hand.

Q. How was this test made? Was it just a single sample or any effort made to get an average?

A. I attempted to get samples—a number of brick—in digging down into the pile and taking bricks so that they would be representative of the average moisture of the pile.

Q. Now, from then on you say you made tests as often as every month?

A. Once a month it was reported.

Q. Did the moisture content of the bricks in that

(Testimony of F. S. Wade.)

lot or stock change during the subsequent time up to February 1910, and if so, in what manner?

A. The moisture content changed very decidedly from the 1st of December to the end of December, 1909. I don't recollect what the moisture percentage was after that time. We started to build a kiln soon after that, and the special tests were made on the kiln. [682]

Q. In what direction did they change?

A. They changed upwards. The moisture percentage increased.

Q. Do you remember how much?

A. Something over eight per cent. An increase of eight per cent is what the tests show. I believe it was something over nine per cent, as a matter of fact.

Q. Did the moisture content show 20 or more per cent?

A. 21.7 per cent, after a very careful determination that I made at the end of December.

Q. The same lot of brick? A. Yes, sir.

Q. Was that the same brick used subsequently in this test?

A. The same brick or the same piles of brick.

Q. Have you ever made any physical experiments and investigations into the tensile strength or the stability of these carbon bricks after they are dried, either naturally or artificially?

A. I have, recently.

Q. State, if you can, from any such examination had, how a kiln-dried brick compares with an air-

(Testimony of F. S. Wade.)

dried brick, the conditions of the bricks otherwise being the same?

A. According to the tests I made, applying what is called the drop-test—a physical test specified in the publication of the United States Geological Survey—the kiln-dried brick showed very considerably more cohesiveness—is the word I would use—than the air-dried brick. The brick used in these experiments was taken about the same time from the brick press or as near as we could get them at the same time, one lot air-dried and the other lot kiln-dried.

Q. To what degree of moisture? [683]

A. The actual moisture results in percentages, I believe, the air-dried brick was 8.7 and the kiln-dried brick was 5. and a fraction, and I don't remember the fraction.

Q. The kiln-dried brick was the drier of the two?

A. A trifle drier.

Q. Otherwise the brick were the same?

A. Yes, sir. The analysis showed them to be almost identical.

Q. How did the five per cent kiln-dried brick compare in what you call cohesiveness with the 8 per cent air-dried brick?

A. The 5 per cent kiln-dried brick showed very considerably more or higher cohesiveness than the 8 per cent air-dried brick.

Q. By the application of the drop test?

A. By the application of this drop test.

Q. Explain what that is and how it operates on these two kinds of brick?

(Testimony of F. S. Wade.)

A. The drop test as described in this pamphlet consists in taking 50 pounds of the material to be tested and dropping it—placing this 50 pounds of material in a box having a trap-door, the bottom of the box being $6\frac{1}{2}$ feet from a cast-iron plate as specified. I used a concrete surface. I did not have a cast-iron plate. The trap-door is suddenly released and the brick dropped. The material that is dropped through the whole mass is sifted through a screen of 1-inch mesh. The part of the material that does not pass through the screen of 1-inch mesh is returned to the box, and the process is repeated five times. At the end of the fifth dropping the amount of material which does not pass through the screen of one-inch mesh is weighed, and that weight is expressed in percentage of the original weight and called the material not passing the one-inch mesh. [684]

Q. So that the drop test consists essentially of dropping the material tested from the height of $6\frac{1}{2}$ feet five times?

A. Five times, onto a solid surface.

Q. Can you state in figures how the kiln-dried brick compares with the air-dried brick under this test?

A. The kiln-dried brick showed 88 per cent not passing the one-inch screen; the air-dried brick showed 70 per cent not passing the one-inch mesh.

Q. Now, this kiln-dried brick, kiln-dried to a moisture content of about 5 per cent, after being dropped through a height of $6\frac{1}{2}$ feet onto a solid

(Testimony of F. S. Wade.)

surface, five consecutive times, yet remained as to 80 per cent of it, in pieces too large to pass through a one-inch mesh? A. Yes, sir.

Q. While the air-dried brick left how much?

A. Just 70.

Cross-examination.

(By Mr. CHAPMAN.)

Q. Have you got the records of that test in writing, in the form of a report?

A. Not in the form of a report.

Q. Have you got the figures or date?

A. Yes, sir.

Q. Will you let me see it?

A. I believe the date is there.

Mr. CHAPMAN.—9-16-11.

A. Yes, sir, the 16th of September. [685]

Q. You did not see these bricks made?

A. I was at the press when they were made, yes, sir. The sun-dried bricks I placed myself on some tin. The kiln-dried bricks required quite a number of bricks to build the kiln. I did not stay there all the time the kiln was being built, but I saw it started.

Q. Do you know how much moisture was in the kiln-dried brick before it was bricked?

A. The general practice is about twenty to twenty-five per cent.

Q. How much fire was put under this kiln? Do you know?

A. I saw the fire a great many times. The attempt was to duplicate the conditions used in dry-

(Testimony of F. S. Wade.)

ing these bricks—I should say about the same amount of fire—a carbon fire was used—in these kilns as was used in the kilns drying the bricks for this water-gas test in March or February, 1910.

Q. You did not make any analysis of the moisture content in the material before it was bricked?

A. No, sir, I did not. I neglected to do that, although I made regular tests of the general run of the material, and it is always from twenty to twenty-five per cent moisture.

Q. Didn't you make any effort to ascertain how much temperature you were getting under the bricks from this fire?

A. I did not. It would have been almost impossible to ascertain.

Q. How long were they in the fire?

A. They were in the fire, I should say, about five days. I think about five days. [686]

[**Testimony of C. A. Luckenbach, for Plaintiff
(Recalled in Rebuttal).]**

C. A. LUCKENBACH, recalled for plaintiff in rebuttal, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. In your testimony heretofore given, you state the water-gas set of The Western Gas Construction Company had been removed, and I think you gave the day when it was removed. State what reason there was, if you know any reason, for removing the set.

(Testimony of C. A. Luckenbach.)

A. It was removed in order to build and construct an oil-gas set at the same location.

Q. Was there at that time any need of increase in your gas making apparatus?

A. That was the reason I installed the set, in order to increase our capacity. [687]

Q. Was there some other convenient site for an oil-gas set that you were about to install?

A. There was not, no, sir.

Q. How was it at that time? How was it at that time the ground on which your gas plant was located, occupied, with reference to there being plenty of space on the ground?

A. We were very much cramped for space. Very much so.

Q. Do you know of any other reason for removing this set at that time? A. Absolutely none.

Q. You were at that time manager of construction? A. Yes, sir.

Cross-examination.

(By Mr. CHAPMAN.)

Q. You found it considerable cheaper to make oil-gas along in 1909 than water-gas, did you not, Mr. Luckenbach?

A. No, sir. The original reason for installing the oil-gas generator was before that, and the original reason for installing this set was because we could make this gas cheaper.

Q. Wasn't there a drop in the price of oil in 1909?

A. There may have been some drop, I won't say. In 1909? Not to the best of my recollection.

(Testimony of C. A. Luckenbach.)

Q. Hasn't the price of oil been gradually depreciating?

A. I am not in close touch with the price of oil at the present time, but I believe we are paying more for oil now per thousand cubic feet of gas made than we were in 1907.

Q. I am asking you if during the last two or three years the price of oil per barrel was not diminished?
[688]

A. To the best of my judgment, the price of oil such as we use in the manufacture of gas has increased rather than diminished.

Q. Do you know about it?

A. That is my judgment. While I say I am not in close touch with the matter—I don't buy the oil—as I gather from different conversations in reference to contracts, and what I do know about it, I would say the oil costs more per thousand feet of gas than it did, and it has for the last three or four years.

Q. I am not asking for your judgment, but do you know the fact.

A. I am explaining as closely as I can. My belief is that it costs more, and that belief would govern me in forming my decision as manager of that department.

Q. Isn't it a fact that within the last couple of years your market and your business of bricking this lamp-black material and supplying it to the domestic trade has been very materially increased?

A. It has increased, but not materially in comparison to the increased output of the carbon. That

(Testimony of C. A. Luckenbach.)

is, the percentage of increase of lamp-black sold in briquets as compared to the total output is not materially improved.

Q. Isn't it a fact that you found that this lamp-black material can be disposed of for this purpose to very much better advantage than it can be converted into water-gas?

A. No. If we could dispose of it all, I would say yes. But we have not been able to and do not expect to be able to.

Q. How much did you get for these bricks per ton?

A. Eight dollars at the yard. We did up to the first of the month. I believe we are now getting nine dollars. [689]

[**Testimony of D. J. Young, for Plaintiff (in Rebuttal).]**]

D. J. YOUNG, called on behalf of the plaintiff in rebuttal, being first duly sworn, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. What is your occupation?

A. I am superintendent of manufacture of the Los Angeles Gas and Electric Corporation.

Q. Manufacture of gas? A. Yes, sir.

Q. How long have you been in their employ?

A. I have been in their employ for about two years and a half.

Q. Did you ever have anything to do with the operation or did you observe the operation of the water-

(Testimony of D. J. Young.)

gas set installed by The Western Gas Construction Company at the gas-works during the test run of March, 1910? A. Yes, sir.

Q. What connection did you have with it, and what particular observation did you have?

A. About the first ten days of the test, I was the inspector for the Manager of Operations, and the last ten days I was acting superintendent. I took charge as superintendent on April 1st.

Q. Superintendent of what?

A. Of the gas-works—gas manufacture.

Q. How long an experience have you had in the gas manufacturing business?

A. I had two years experience back east, and then two and a half years here. [690]

Q. What were you doing in the business back east?

A. Operating a water-gas plant.

Q. Using what material for fuel? A. Coke.

Q. During your experience here, what material have you used? A. Carbon lamp-black.

Q. Did you see the fuel delivered to this water-gas set? A. Yes, sir.

Q. That was bricked fuel? A. Yes, sir.

Q. I call your attention to the brick lying on the clerk's desk, and ask you if that is a representative sample of the kind of fuel that was furnished to this set during this test? A. Yes, sir.

Q. What shape did you use the carbon in the water-gas set of the gas company in your experience?

A. We have used both lump and brick.

Q. In using bricks, were they such brick as this?

(Testimony of D. J. Young.)

A. Yes, sir, the same kind of brick.

Q. How did the brick furnished to this set during this test compare with the average run of brick that you used in your own water-gas set?

A. They compared very favorably. That is, these bricks are as good or better than our ordinary bricks.

Q. How do they compare in tensile strength and cohesiveness and ability to retain their shape?

A. I think the brick furnished them were a little better in that respect. The bricks that we ordinarily used were not as well dried as those bricks are.

[691]

Q. Did the bricks that were furnished this set during the test run, break up at all? That is, on their way to the generator? A. Yes, sir.

Q. To what extent?

A. Well, they were dropped into a hopper below and carried above into a bin and slid from the bin into the charging-box, and they broke up just about as our brick do under that handling. I would say anywhere from ten to fifteen per cent of waste was sifted out on the screen above.

Q. By sifted out, do you mean sifted out before or after the brick went into the generator?

A. Before they went into the generator.

Q. After the material went into the generator, how much fine material or dust?

A. Well, there was very little or practically none of it dust. There were some small particles of brick went in, maybe as big as your fist or half a brick or something of that kind, but very little of what you

(Testimony of D. J. Young.)

would term as dust.

Q. Did you observe at any time the condition of the fuel bed during the time of this test?

A. A few times. I did not observe it very closely.

Q. Have you had occasion to examine and observe the fuel bed in your own water-gas set while you were manufacturing gas from this same brick?

A. Yes, sir.

Q. How did the appearance of the fuel bed in this Western Gas Construction Company's set compare with the appearance of the fuel bed in your own set when operating with the same kind of fuel?

A. Well, it looked just the same. I couldn't tell any difference. [692]

Q. Have you any experience with the making of brick from loose lamp-black? A. Yes, sir.

Q. Do you know anything about the behavior of the lamp-black in the brick-making machines and the capacity of the brick-making machine with lamp-black having different percentages of moisture in the loose material? A. Yes, sir.

Q. State what the different degrees or percentage of moisture in the loose material,—what effect it has upon the making of brick with that material?

A. With the brick machines that we use, it is impossible to make bricks with material, say, of five to ten per cent. We cannot get them to a hard and brick form—if we put more pressure on, the machine either breaks or stalls. With bricks made with fifteen or twenty, they retain their form in good shape and make good, satisfactory brick. Our average prac-

(Testimony of D. J. Young.)

tice in making bricks is from twenty to twenty-five per cent moisture.

Q. You mean moisture in the loose material?

A. Yes, sir.

Q. What do you do, if anything, with the brick after it is made, to reduce the moisture content in the brick?

A. We pile them about five or six feet deep and let them stay till we are ready to use them.

Q. Is it your practice to do that, or do you take the brick of twenty-five per cent moisture and use them?

A. We have used twenty-five per cent moisture bricks, but we find it gives better results to air-dry them.

Q. Have you any experience with kiln-drying these bricks? A. Yes, sir.

Q. Do you know what, if any, difference kiln-drying makes with bricks from the air-drying? [693]

A. I couldn't tell any difference between the kiln-dried brick and the air-dried brick. The experience I had was in connection with this set.

Q. Have you compared the brick from the same material made under the same conditions that were air-dried and kiln-dried in order to ascertain whether there was any apparent difference?

A. I don't know that I ever got the two right together, but I had quite a good deal of experience in handling air-dried brick, and in that test I watched those bricks very closely, and I think I know the equalities of the two bricks, and I couldn't tell that

(Testimony of D. J. Young.)

there is any difference.

Q. Could you distinguish one from the other if samples were shown you? A. I think not.

Q. I call your attention again to this sample, exhibit "L," and particularly to the cracks that show on the surface, running longitudinally in the brick, on the narrow face, and ask you if that is or is not a common appearance with these lamp-black bricks?

A. Yes, that is a common occurrence with manufactured brick.

Q. Does that characterize either the kiln-dried or the sun-dried brick?

A. Yes, sir. That is in the brick as it is made, and has no reference to the way it is dried.

Q. Do you know what the effect of overloading the carbureter with oil in the water-gas set is in operating the machine? A. Yes, sir.

Q. What is it?

A. It has a tendency to stop the carbureter up. That is the effect it has on the machine. You mean how it is observed?

Q. Yes, both how it is determined and observed—
[694]

A. It overflows into the seal, and evidences itself there.

Q. Have you any knowledge how this machine behaved in that respect?

A. I only noticed that once or twice. I saw oil on it once or twice. I didn't notice it very often.

Q. That was oil in the water coming from the seal?

A. Yes, sir.

(Testimony of D. J. Young.)

Q. How often were you there so that you could see the water in the seal?

A. The last ten days of the test I was up there once or twice every day, but I didn't pay particular attention to that?

Q. Is the sufficiency of the carbureter in a water-gas set dependent at all on the shape of the carbureter, or does it depend entirely upon the number of brick in use, or on the area of the heating surface inside? A. It depends on both.

Q. What difference does the shape of the carbureter have?

A. Well, if the carbureter is too small in diameter or cross-section, or has the same amount of brick in it that one of the larger cross-section area has, it will not handle as much of the oil. That is, it will not gasify as much oil. To illustrate that better, you may carry it to an extreme and assume a carbureter only a few feet in diameter, but still long enough to have the necessary amount of checker-brick. It is very obvious it would not handle the amount of oil used to enrich the gas.

Q. From your experience in the operation of water-gas sets, what in your opinion is the average daily capacity of this set, run to its full capacity for a period of twenty consecutive days? Take the generator first.

A. I think the generator is probably of sufficient capacity to make 2,000,000 feet.

Q. For that period of time, continuous run?
[695] A. Yes, sir.

(Testimony of D. J. Young.)

Q. How about the carbureter?

A. I don't think it is. I think it is too small to handle the oil for that much gas.

Cross-examination.

(By Mr. CHAPMAN.)

Q. If the machine was operated more than 7 or 8 days continuously without any burning out of the carbureter, would you expect it to be in first-class condition?

A. Well, I don't know. The machine ought to run 20 days without being very seriously affected in the carbureter.

Q. Then, why do you burn out your machines once every week? [696]

A. We burn them out for two reasons: The main reason is to be certain that they are given the proper attention. We operate on a schedule, and those machines want to be kept in proper condition. They are burned out at a regular time every week, and we know that it is done. Another reason is so that they can burn out in the carbureter whatever choking up there is in there. They burn out sometimes twelve hours a week, and sometimes twenty-four, and sometimes less. We have operated them for a considerable length of time without any burning out, without any serious effects of them.

Q. Suppose this machine started up on the 17th and made on an average considerably over 2,000,000 feet of gas, until the 26th—eleven days?

A. That would be ten days, I think.

Q. Without any burning out of the carbureter,

(Testimony of D. J. Young.)

would not that indicate that it had a capacity to make 2,000,000 feet of gas regularly right along, continuously, if at the end of every sixth day it was put upon draft for a day?

A. The condition of that carbureter at the end of that period would make a good deal of difference. If the carbureter at the end of that period was clear and in fairly good working condition, it might indicate that it was making 2,000,000. But if it was seriously clogged, it would indicate that it would not make 2,000,000.

Q. Well, at the end of the 6th day would be the 22d? A. Yes.

Q. And if on the 22d the machine had made 2,074,000 feet of corrected gas, wouldn't that indicate that the carbureter must have been in pretty fair condition?

A. Well, I don't know. I take it it would depend on the way the make went. If the make was large and dropped off regularly, it would show that the carbureter was not in good condition. [697]

Q. Suppose on the next day and the next day it made a little over 2,000,000 feet, and on the third day after that and the fourth day it made a little over 1,900,000 feet, wouldn't that indicate that at the end of the sixth day the carbureter must still have been in fair condition?

A. I don't know. I don't know that it would indicate it.

Q. Were you educated as a gas engineer?

A. No, sir, I was educated as a civil engineer,

(Testimony of D. J. Young.)
which has mechanical engineering.

Q. Have you studied mechanical engineering?

A. Yes, sir.

Q. Have you ever paid attention to the designing of water-gas apparatus?

A. I have paid a good deal of attention to the designing of them.

Q. Have you ever had anything to do with the operation of water-gas sets other than the sets in Kentucky and the sets here? A. No, sir.

Q. Your actual experience in the handling of such machines has been obtained in your experience in these two places, during the last three or four years?

A. A period of about five years.

Q. How soon after overloading a carbureter with oil would it evidence itself in the seal?

A. If the carbureter was good and clean and they started to overcrowd it, it might take two or three days to evidence itself.

Q. You mean by overloading it, more oil than can be gasified?

A. Yes, sir, the oil would be deposited on the bricks [698] instead of carrying over into the seal, and after it has deposited on the brick as much as it will carry, then you get it in the seal.

Q. Why doesn't it continue to deposit on the brick instead of going to the seal?

A. It does. It always goes on. The brick is not able to take as much.

Q. Isn't it a fact that the oil that appears in the seal is not oil that runs through by gravity, but is

(Testimony of D. J. Young.)

carried through by the gas? A. Yes, sir.

Q. In other words, the oil comes over with the gas?

A. Yes, probably in fog form, when it is carried through in the form of gas.

Q. A vapor form? A. Yes, sir.

Q. And the gas comes in contact with the ungasified oil, which absorbs it in that vapor form and carries it into the seal.

A. It is shoved forward by the velocity of the gas.

Q. Can you explain why it is that the gas that comes in contact with the oil—the ungasified oil—say in the first ten minutes that there is any ungasified oil, it does not carry some part of it over into the seal instead of waiting two or three days?

A. It has got to go through all the checker-brick and the superheater. The checker-brick will stop the oil till their surface commences to get coated.

Q. Why is it that the gas coming in contact with the oil the first time does not carry it over and yet it does carry it over later? [699]

A. As your carbureter gets choked up, the space between the bricks is smaller and the gas comes through at a faster velocity than when it is perfectly clear. It has a smaller area to go through.

Q. It must get velocity where it takes oil over?

A. Yes, sir.

Q. You don't mean the oil is in the form of a liquid oil? A. No, it is in the form of fog.

Q. And it passes as easily and readily as the gas?

A. No, I don't think it would. It is heavier than gas.

(Testimony of D. J. Young.)

Q. So it cannot pass over and show in the seal until after the carbureter was clogged up?

A. Now, if you are very seriously overloaded to start with, some will come over to the seal. But if your overload is not so large, it will take longer.

Q. You might see it instantly?

A. You might see it instantly if you pumped enough oil in there—almost instantly.

Q. Isn't that the criterion that the gas operator goes by when he is operating his machine,—that he watches the seal all the time? A. Yes, sir.

Q. And if he sees it appear, he reduces the quantity of oil and raises his heat? A. Yes, sir.

Q. Isn't he able to be advised all the time as to the balancing of his machine in regard to the quantity of oil he carries?

A. He takes into consideration the heat in his carbureter. If he has a sight-hole he can see and tell how hot it is [700] by looking at it.

Q. You can talk about a good, satisfactory brick, and I believe you describe that as a good, satisfactory brick. Do you mean one that can be handled through the course that the brick had to go through into this generator without breaking or without crumbling up?

A. Without any serious breaking. That brick broken in two, if there was no further breaking, would be just as good as it is that way.

Q. Would you call a brick a good, satisfactory that you could give a kick and pulverize it and break it all to pieces?

(Testimony of D. J. Young.)

A. It depends on how hard the kick is, but an ordinary shove of the foot would not show a good, satisfactory brick. It should stand a drop of two or three feet.

Q. Would you say you were served with good, satisfactory brick if in putting them through the course that this went, probably 15 or 20 or 30 per cent of them broke up and went through the slots that were cut in those chutes?

A. We have that condition *all time* down there, and we call it satisfactory. About 15 per cent waste, or something like that.

Q. Isn't it a fact that in the process that you now use that you can make a brick that is able to withstand almost any kind of handling and that you can throw around, and is strong and solid?

A. Well, there is a pretty good sample; that brick right there is a very good sample of the brick that we make at present.

Q. I am asking you if you do not make a good, strong, substantial brick that will withstand any reasonable handling? A. Yes, sir.

Q. And these briquets that you briquet up are strong and [701] solid and hard as coal?

A. They are not as hard as coal, but they are good strong solid briquets.

Q. Do you know how these briquets were made that were used in this test? A. I do not.

Q. You do not know whether the material went through the drier before they were bricked or not?

A. No, sir.

(Testimony of D. J. Young.)

Q. Isn't it true that in making your brick at the present time that you deliver from the drier carbon containing from 15 to 20 per cent moisture?

A. No, sir, not brick.

Q. I mean the material.

A. No, sir, we are not making bricks out of mechanically-dried material, and have not for several months.

Q. In making briquets you do?

A. In making briquets we do.

Q. Then, you carry it by conveyors to a screen about a quarter inch mesh, and there remove the lumps, and deposit the carbon in the bin?

A. Yes, sir.

Q. Then, you press the carbon into the brick for water-gas or boiler fuel or into a briquet *or* commercial fuel?

A. We don't do that at present, no, sir. We have not for several months. We can do it and may do it sometime, but we do not do it now.

Q. You did as late as September, 1911, didn't you?

A. No, sir.

Q. Now, did you write this paper published in the "Journal of Electricity, Power and Gas" of September 23, 1911? [702]

A. I wrote that in August.

Q. You did it as late as August?

A. No, sir; we had not made bricks out of mechanically-dried stuff for several months.

Q. Is this a correct statement: "While the bricks or briquets as they leave the machine, are apparently

(Testimony of D. J. Young.)

very strong, they are not ready for use until they have been seasoned or air-dried." A. Yes, sir.

Q. Then, they have to remain in the air and be allowed to set or season? A. Yes, sir.

Q. And the effect of which is to cause them to set?

A. Yes, sir.

Q. Is this a correct statement: "In air-drying the briquets we pile them from four to six feet deep and leave them for three to six weeks."

A. Yes, sir, that is correct.

Q. And is that a sufficient time ordinarily to cause them to set and dry out?

A. In the summer time it is; yes.

Q. You do that under cover, do you not?

A. Some under cover, but most are air-dried out in the open.

Q. Don't you state in that article that "This should be done under cover"?

A. Yes, sir. That had particular reference to places where they have more rain than they do in Los Angeles.

Q. And that makes a good, hard, substantial article? A. A very satisfactory article.

Q. Either brick or briquets?

A. Yes, sir. [703]

Q. That can be handled without danger of breaking in any reasonable manner?

A. Yes, sir, without any serious breaking.

Q. Is this a correct statement: "While at present we use carbon for boiler fuel and water-gas fuel, and manufacture briquets for sale as commercial fuel,

(Testimony of D. J. Young.)

our experience has proven that briquets for commercial fuel yield the greatest value per ton for the carbon, and therefore receive first consideration in our plant"? A. Yes, sir, that is a fact.

Q. What is the capacity of your drying apparatus, Mr. Young?

A. The present capacity is about 85 tons, 75 to 85 tons.

Q. Per day?

A. Yes, sir, figuring on the material to have 15 or 20 per cent moisture.

Q. What was the capacity at the time this test was in progress? A. About 30 tons.

Q. Did you have any of the machines at that time that you have now? A. Yes, sir.

Q. Isn't one of those machines 40 tons and the other about 50?

A. It might be possible to force the smallest machine up to 40 tons a day. [704]

Redirect Examination.

(By Mr. GOUDGE.)

Q. This drying machine you refer to is the machine for drying the loose carbon?

A. Yes, sir, for drying the loose carbon.

Q. Is it capable of drying brick?

A. No, sir.

[Testimony of F. S. Wade, for Plaintiff (in Rebuttal).]

F. S. WADE, recalled on behalf of plaintiff in rebuttal, testified as follows:

Direct Examination.

(By Mr. GOUDGE.)

Q. State what is the process, chemically, or the change that the oil is subjected to that is injected into the carbureter in a water-gas set. What is the chemical or scientific name for the change that takes place in that oil? A. Destructive distillation.

Q. Upon what chemical constituent or constituents in the oil or in oils subjected to destructive distillation does the amount of residue deposited or left after that distillation has occurred, depend?

A. It depends first on the nature of the hydrocarbons being distilled, and at the same time, the percentage of carbon in those hydrocarbons—in the hydrocarbons that make up the oil, or whatever is destructively distilled.

Q. Now, all natural oils—petroleum, that is to say—are called hydrocarbons? [705]

A. They are mixtures of hydrocarbons.

Q. Is there any name chemically or scientifically given to the residuum that said oils leave behind after distillation?

A. Why, it is generally called coke in any practical or experimental oil distillation.

Q. And this coke is left behind after distillation? That is, there is some solid matter that does not come over in distillation?

(Testimony of F. S. Wade.)

A. Solid matter. Practically pure carbon.

Q. Have you ever subjected it to analysis with a view to determining the percentage of coke, that is, the residue left after distillation of the oil, any California oils having an asphaltum base, and eastern oils having a paraffine base? A. I have.

Q. State what are the percentages, respectively, to the cokes. That is, solid material left after distillation in those two classes of oil.

A. The percentage of coke in California oil depends very largely on the specific gravity of the oil. Taking an oil, say of 19 degrees Baume, there is about 15 per cent coke left on distillation. A sample of Wyoming oil—paraffine base oil—about 38 degrees Baume, had practically over 2 per cent coke.

Q. Now, can you state whether that is an average coke percentage in paraffine base oil, or within what percentage the average paraffine oil will range of coke?

A. I think that is fairly representative. I should say up to 5 per cent of coke in paraffine oils.

Q. And what is the range in the heavy California asphaltum oils on the average?

A. The very heaviest asphaltum oil might run quite high—25 per cent. [706]

Q. Do you know what the specific gravity Baume of the oils used in the Los Angeles Gas and Electric Corporation's gas-works is—the oils used in gas making? A. Approximately 19 degrees Baume.

Q. Taking an oil of 17 degrees—California crude oil—what is the percentage, if you know, of coke in such oils?

(Testimony of F. S. Wade.)

A. I cannot say exactly, but it would be about 15 to 20 per cent.

Q. And is that percentage by weight?

A. Percentage by weight.

Q. So, of such an oil about 15 per cent by weight is coke or solid matter which is left behind on destructive distillation?

A. Yes, at the end of the destructive distillation.

Cross-examination.

(By Mr. CHAPMAN.)

Q. Isn't it a fact that the deposits left on the checker-brick in carbureters and oil-gas machine is of the hydrocarbon? A. No, sir, it is not.

Q. Pure carbon?

A. Almost pure carbon, according to my observation—well, that depends on the stage when it is originally deposited. It is probably deposited as a heavy hydrocarbon, but that is distilled out and leaves behind a coke. The final deposit is almost pure carbon.

Q. Is it a fact that the pure carbon residue—excess of carbon after gasification will pass off with the gas as lamp-black? [707]

A. Well, a considerable percentage of it does. That is, the carbon that is made on account of the breaking down of the hydrocarbons that are distilled. There is a great excess of carbon in the hydrocarbons that are distilled and is broken down.

Q. In the water-gas carbureter you do not have any lamp-black? A. No lamp-black, no, sir.

Q. Why?

(Testimony of F. S. Wade.)

A. The distillation is not carried on to such a high temperature. The residue that would occur from lamp-black in an oil-gas generator, appears as tar. The distillation is not carried on so far. The carbon is used up in gasification to almost an entire extent, is it not?

A. With the exception of the percentage of coke that is deposited on the brick where the oil impinges.

Q. If there is an excess of coke or carbon that is deposited as the result of distillation, why doesn't it appear in the seal in the form of lamp-black particles as well as being deposited on the checker-brick?

A. That is very difficult to say. I expect there is some free lamp-black or some free carbon in tar. I won't say there is no lamp-black made in the water-gas carbureter, but it does not appear as lamp-black. I think there is some free carbon in the tar from water-gas.

Q. It is a very small percentage as compared with the manufacture of gas from an oil-gas machine?

A. Yes, sir.

Q. Do you call distillation the same thing as gasification?

A. Gasification is destructive distillation.

Q. What do you mean by destructive distillation?

A. Distillation is destructive or alteration in the [708] hydrocarbon. The destructive distillation or the product of it cannot be condensed back into the original material.

Q. It is not the mere conversion of the oil into vapor, is it? A. Gasification?

(Testimony of F. S. Wade.)

Q. No, distillation.

A. Simple distillation is the mere conversion of oil into vapor.

Q. Is that what you mean to say takes place in these carbureters?

A. There is some simple distillation, and most of it destructive distillation. I have no doubt there is some simple distillation. Some of the hydrocarbons may come over entirely.

Q. Do you know what the object of constructing a carbureter tall in comparison with the width is?

A. I can only hazard a guess. I don't know.

Q. Don't you know it is a necessity that the gas be brought to pass through as long a series of bricks as possible in order that it might be brought into contact with the surface of the brick repeatedly, to be sure that all the gas comes in contact with the brick?

A. I don't see that anything would be gained by passing or that any better results would be obtained by passing gas through a long chamber of brick at a high velocity, than to pass it through a short chamber of brick at a low velocity. I don't see that there is any particularly different result to be obtained.

Q. That is not an answer to the question I asked you. I asked you if it was not a necessity that it should be brought in contact—

A. I don't think so; no. [709]

Q. And it makes no difference whether it passes through a short series of bricks or a longer series?

A. I couldn't say. I can only base my opinion on a theory.

(Testimony of F. S. Wade.)

Q. Well, if you can't say, I will not ask for it.

Mr. EDWARDS.—That is our case.

Mr. TRIPPET.—At this time, when plaintiff is about to close its case, I think it is proper that we should make a statement so that the Court and counsel may not be misled. As I understand the theory of plaintiff's case, they rely on the stipulation in this contract in the last paragraph in which it is provided, "and the party of the first part agrees that if said party of the first part cannot, during said test, bring said apparatus to an established capacity as herein defined, of at least two million cubic feet per twenty-four hours, of the kind of gas specified in said contract, with the same economy of oil and lamp-black fuel containing not more than ten per cent moisture, mentioned in said contract, said party of the first part will remove at once without any cost to the party of the second part, said apparatus from the premises of the said party of the second part, and repay to said party of the second part all money heretofore paid or advanced by said party of the second part to said party of the first part under said contract, to wit: \$26,823.45." As I understand the theory of plaintiff's pleadings and evidence, they are seeking to recover the cost of removing that apparatus and this \$26,823.45. Our witnesses are about to leave the city, and I want to say to the Court and counsel that we will contend on the argument that that provision in the contract is void as being a penalty or stipulated damages, and it cannot be recovered. The only amount they can recover is such

(Testimony of E. C. White.)

damages as may be proven that [710] they are entitled to. And I shall object to their amending their complaint and going upon a different theory after we close the case.

Mr. GOUDGE.—May we ask which amount it is when you say that amount cannot be recovered, under your theory?

Mr. TRIPPET.—\$26,823.45.

Mr. GOUDGE.—What about the cost of material?

Mr. TRIPPET.—We will argue that that whole paragraph is stipulated damages.

Mr. GOUDGE.—Either of those amounts you refer to?

Mr. TRIPPET.—Yes, sir.

The COURT.—Under the statement, I will not allow any amendment to the complaint from this time forward. Do you gentlemen contemplate any?

Mr. GOUDGE.—No, sir.

The COURT.—Well, that accomplishes all you desire.

[**Testimony of E. C. White, for Defendant (Recalled in Surrebuttal).]**

E. C. WHITE, recalled for the defendant in surrebuttal, testified as follows:

Direct Examination.

Q. How frequently did you look into the seal of this apparatus as the test proceeded?

A. I looked at it very often during each day.

Q. Did you ever notice the appearance of the oil in the seal?

A. I never noticed the appearance to any great ex-

(Testimony of E. C. White.)

tent. There is always little blotches of oil coming over. The water was used over and over and over again in the gas company's set, as well as ours. They kept pumping it over, and it naturally was discolored, but no clear oil at any time.

Q. Did you ever notice the appearance of any oil in the seal that would indicate to you as a gas operator that the machine was being overcrowded with oil?

A. I never did, no, sir. [711]

Q. Did Mr. McDonald call your attention to any appearance of oil in the seal and state to you that it indicated that the machine was being overcrowded and did you in answer to any such statement inform him that it was too bad?

A. I never recollect saying anything to Mr. McDonald about excessive oil in the seal or his saying anything to me.

Q. Did Mr. McDonald at any time say to you that he thought the fuel was all right?

A. No, sir, he said just the reverse. He said it was rotten fuel.

Q. Did he ever make any other comment besides that?

A. Yes, he often mentioned when we were receiving the worst brick, especially the hot brick, that it was impossible to make gas with such a grade of fuel, and that if we could only let our fire down and receive better fuel, that we might build up and make good, but it would be of no use as they kept sending the same stuff over again—powdered up—and he often spoke of it as being out of the question to make good

(Testimony of E. C. White.)

with such a character of fine dust.

Q. Did Mr. Creighton ever say to you that the oil was appearing in the seal, and in connection with that statement did you ask him whether he thought it indicated a bad condition or was there any unusual quantity, or anything to that effect?

A. No, sir. I don't recollect ever talking to Mr. Creighton. I saw him very seldom on the floor.

Q. Did Mr. Creighton ever inform you that he thought the difficulty with this machine was in the lack of sufficient diameter in the carbureter or anything of that nature?

A. No, sir, it was never spoken of.

Q. Did you ever say to Mr. Carey that you didn't see why or didn't believe Mr. Luckenbach would hold you to the strict letter of the contract? [712]

A. No, sir. The last person in the world that I would say anything like that, if I was inclined to. He was inspector there and I knew he was reporting everything.

Q. Did you ever tell Mr. Carey that you knew that set or believed that set could not make the guarantee, but that the corporation would come over a little? A. No, sir, never.

Q. Or anything to that effect? A. No, sir.

Q. Did Mr. Larrimore ever tell you that Mr. Mil-lard had instructed him to inform you that your ma-chine was to make 20 candle-power gas?

A. No, sir, he never did.

Q. How soon after water-gas apparatus of this kind is overloaded with oil to such an extent that it

(Testimony of E. C. White.)

cannot be gasified by the carbureter, will it show in the seal? A. It will show almost immediately.

Q. Does it take two or three days of that condition to manifest itself?

A. No, sir, it won't take two or three minutes.
[713]

[**Testimony of E. E. Chandler, for Defendant (in Surrebuttal).]**

E. E. CHANDLER, called on behalf of the defendant, in surrebuttal, being first duly sworn testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. What is your business?

A. Chemist. Professor of chemistry at Occidental College.

Q. How long have you been a chemist?

A. About ten years.

Q. And have been studying the science during all the time? A. Yes, sir; and practicing.

Q. You are familiar with this material called lamp-black, which is a by-product of oil-gas making process of the Los Angeles Gas and Electric Corporation's plant? A. Yes, sir.

Q. Do you know whether that material contains any substance of a hydrocarbon nature?

A. Yes, sir, it does.

Q. You have made some analyses to ascertain?

A. Yes, sir.

Q. Can you state in a general way what the percentage of that material is in the lamp-black?

(Testimony of E. E. Chandler.)

A. Well, it varies. The percentage of hydrocarbon will vary with the percentage of water. In one brick that I analysed where the water was 17 per cent, the hydrocarbon was 11 and a fraction, and the carbon and the ash the balance.

Q. Is that the same substance that is sometimes the volatile combustible matter? [714]

A. There are volatile hydrocarbons in the main, but not entirely volatile however.

Q. Has this volatile matter any binding characteristics? A. Yes, sir, that is the binder.

Q. What effect does it have in the compression of material into a brick?

A. That is the only thing in the brick that has any effect in making a brick from it.

Q. Is lamp-black affected chemically by being brought in contact with water under pressure?

A. Absolutely none. There is no chemical reaction, neither any physical reaction or solubility.

Q. In the solution of clay with water and packing it and afterwards drying it off, is there any different action takes place?

A. Yes, sir, a decidedly different action. The clay is lightly soluble in the true chemical sense, and also to a much larger extent in what are called pseudo solutions or colloidal solutions, the clay being slightly soluble when it is mixed up and allowed to dry, the water escaping allows the particles of clay to come in close contact with each other, and therefore gives substantiality to it.

Q. Is that the explanation why the clay has some

(Testimony of E. E. Chandler.)

adhesive stability? A. Yes, sir.

Q. Does not some reaction or effect result from compressing lamp-black with water?

A. No, sir.

Q. Why is that?

A. There is no action of water whatever on the lamp-black.

Q. Is the lamp-black soluble in the same sense that clay is? [715] A. No, sir, not in any sense.

Q. Do you know whether lamp-black which is free of this binder material that you have described as volatile hydrocarbons, could be bricked?

A. My experience is that it could not, and also my theoretical conclusion would be that it could not.

Q. Have you tried it?

A. I tried it this morning, yes, sir. I had some pure lamp-black which is the same kind used in making paint, and I ground it up in a mortar with water and got it into a stiff paste and then moulded it into a cupel machine, and then dried it out. I did not get it entirely dry. I dried it out in an oven at 130 degrees Centigrade for an hour. That is as long a time as I had.

Q. Did it have any stability at all? A. No, sir.

Q. Have you made any experiments with this by-product of the lamp-black by the application of heat to it after it was bricked?

A. Yes, sir, I sawed particles from three bricks said to come from the Los Angeles Gas and Electric Company, and dried them out at such a temperature as that the volatile hydrocarbons were expelled.

Q. What was the effect upon the brick?

A. The effect was that cracks appeared, and in one case the substance simply came in two of its own accord. That is, in picking it up it dropped in two.

Q. Have you made any other efforts to ascertain what would be the effect upon a brick of drying it out by the application of considerable heat?

A. Yes, sir, I made about a dozen bricks in a small mould [716] drying the material out first. In one case I dried it to 24 per cent moisture, in another case to 4 per cent moisture, and another case to a little over 1 per cent, and another case to 5 per cent of moisture, and then moulded the material into briquets.

Q. What did you find to be the effect of applying heat to it?

A. I found that the best results that I got were obtained from the material which contained one per cent and possibly four per cent. Those two were the best brick. I think the one containing one per cent moisture was the best, although the two were fairly good. But the one which contained the 5 per cent moisture had lost a good deal of its hydrocarbon or binder, and it was impossible to make a coherent brick of that material, with the greatest pressure I could put on it. The material that had 24 per cent moisture, as it appeared then was somewhat damp, and of course was softer than the other brick.

Q. Did it brick well?

A. It bricked well enough, yes, but it was soft.

Q. Have you tried drying out a brick that had con-

(Testimony of E. E. Chandler.)

siderable moisture, say 15 or 20 or 25 per cent, after it was bricked, by the application of intense heat to it?

A. I did. I first dried it out by the application of a moderate degree of heat, simply heating it in an ordinary oven, and then after that I dried it out by the application of intense heat.

Q. What was the result of the slight heat?

A. An improvement in every case.

Q. When you subjected it to a considerable heat what was the result?

A. It was destroyed. That is to say, the brick was destroyed. The cracks appeared. The individual particles [717] of the brick in some cases seemed to be harder than they were before. That is, in driving out the hydrocarbon and moisture the particles came close together by contraction, and cracks appeared in some cases. The particles did not crack and were hard enough but the brick as a whole broke.

Cross-examination.

(By Mr. GOUDGE.)

Q. When you say you dried those bricks at such temperature that the hydrocarbons were expelled from the brick, what temperature was that?

A. Well, that was a high temperature. I hardly know, I merely put the brick on an asbestos board and put a Bunson burner under it and heated it till no more hydrocarbon came out.

Q. That is, it was a sufficient temperature to expel all the volatile hydrocarbons?

(Testimony of E. E. Chandler.)

A. I don't say that it expelled all of them, but in the main it did. In chemical analysis we heat to a higher temperature than that.

Q. But it was sufficient to expel practically all the volatile hydrocarbons?

A. I think so, yes. I didn't make any analysis of those bricks to see how much volatile matter remained. That is, merely an estimate that I make as to the heating.

Q. None of these experiments that you made in the manufacture of brick from loose lamp-black with different moisture contents in the loose lamp-black, were made on a commercial brick-press?

A. No, sir. [718]

Q. What is graphite?

A. Graphite is one of the three allotropic forms of carbon.

Q. You know of course that powdered graphite can be pressed together in a solid form in a proper press so as to maintain its form and shape, as in the making of pencils for arc lights?

A. I won't say whether they had any binder added to them or not. They do press it out into shape. I know they do in the case of making the pencils for arc lights. There they take amorphous carbon such as this and grind it up fine, mix it with molasses decompose and the carbon which is contained joins the carbon particles together, and you get a tolerable stiff body.

Q. Now, the manufacture of these electric light pencils or carbons is carried on as you say, the main

(Testimony of E. E. Chandler.)

constituent being some form of amorphous carbon or lamp-black? A. Yes, sir.

Q. And that is made into a paste with a hydrocarbon?

A. A carbo-hydrate which is more easily decomposed than a hydrocarbon.

Q. And they assume a solid form by means of that binder. Then the pencil is subjected to such heat as to drive off the volatile part—

A. No, sir, it decomposes the carbo-hydrate as sugar does, leaving the carbon there, and that carbon being there grabs hold of the other carbon, and you get a substantial body. It does not drive off the hydrocarbon. And to the extent that this same substance contains a hydrocarbon which can be driven off without decomposition, it is of no value in the formation of a brick when it is subjected to high temperature. For instance, any of that left would be of no value in sticking [719] the raw material together. Neither would it be of any value in sticking the particles together after subjecting to a high degree of heat.

Q. The electric light pencils, after they are baked do not contain hydrocarbons?

A. No, they contain carbon that came from the hydrocarbon.

Q. They do not contain hydrocarbon?

A. No, sir, not after they are baked sufficiently.

Q. And yet the pencil is harder than it was before making?

A. Oh, yes. That is the ideal way to get your car-

(Testimony of E. E. Chandler.)

bon—from some combination, so that it comes out in atomic state, so as to come in very close intermolecular contact with the rest, and thus form a hard body.

Q. Then, the binder which would originally hold the particles of lamp-black together is either driven off or changed in the process?

A. Some of it is driven off and some, no doubt, is changed, and the carbon residue is left, and that particular residue which comes from the decomposition of the hydrocarbon would still be of use in making the brick hard, even in the heat. I had a little experience which would throw a little light on that. In this brick which I made from material containing 5 per cent moisture, I found still 8 per cent of hydrocarbons.

Q. Have you analyzed any of the brick that came from the Los Angeles Gas and Electric Corporation's yard or stock?

A. Just what was furnished me. Particles furnished me—yes, sir. Those three bricks that were furnished me. This other did not come from there. It came from the Lowe Gas Company, I understand.

[720]

Q. Well, it had been bricked?

A. Yes, sir, that which I referred to.

Q. Do you distinguish between bricks and briquets? A. Yes, sir.

Q. This was in the shape of building brick?

A. Yes, sir.

Q. Did you ever find hydrocarbons in that material? A. Oh, yes.

(Testimony of E. E. Chandler.)

Q. When you say you found 11 per cent of hydrocarbons, was that from the brick?

A. Yes, that was from this particular brick.

Q. So that in a brick formed, the material still had 11 per cent of hydrocarbons? A. Yes, sir.

Q. Do you know how that brick had been dried?

A. It was said to have been sun-dried.

Q. You don't know about that? A. No, sir.

Q. How large a percentage of moisture did that brick material contain?

A. I will have to look at my analyses. There were three bricks furnished me, all of which I analyzed. The first was a green brick.

Q. That is, said to be a green brick?

A. Yes, sir. It was a green brick because it contained 17 per cent of moisture—I will give it in whole numbers—11.3 per cent of volatile matter.

Q. By that you mean the same thing as hydrocarbon?

A. I should have said volatile hydrocarbon or volatile at the temperature used in the analysis. And a kiln-dried brick or said to be kiln-dried brick which contained 6.1 per cent of moisture and 11.1 per cent of volatile matter, and a [721] sun-dried which contained 3.5 per cent of moisture and 12.1 per cent of volatile hydrocarbons. I made those three analyses on material said to come from the Los Angeles company.

Q. These percentages are by weight?

A. Yes, sir.

Q. It is true, then, that the kiln-dried brick had

(Testimony of E. E. Chandler.)

the same percentage of hydrocarbon in it as the green brick, substantially?

A. Yes, sir, substantially the same. But you have to make an allowance there because the green brick contained 17 per cent moisture, and of course that would necessarily make the hydrocarbon in the green brick less, because the water was more.

Q. It would make it less if you took the water into account. But the proportion of hydrocarbon to carbon is not affected by withdrawing the water.

A. Yes, in that it is—wait a minute. I didn't catch your question. The ratio of hydrocarbon to carbon will not be affected.

Q. Then, the air-dried brick had still less moisture 3.5 per cent—and proportionately to the whole brick more hydrocarbon, namely, 12 per cent.

A. Yes, sir.

Q. So that if the hydrocarbon is a binder, neither the air-drying nor the kiln-drying had diminished the proportion by weight of binder in the brick?

A. Yes, I should say that the kiln-drying contained a less proportion of hydrocarbon than the sun-dried, as appears from those figures. Six to eleven as against three to twelve.

Q. No, no. I mean proportion of the hydrocarbon to the weight of the brick. You say the kiln-dried brick had 11 [722] per cent of hydrocarbon in it by weight, and the air-dried brick had 12 per cent by weight. A. Yes, sir.

Q. Do you know, assuming the same hydrocarbon percentage is in the loose lamp-black, what difference

(Testimony of E. E. Chandler.)

the percentage of moisture in loose lamp-black—what the best percentage is in practical operation in the making of brick from that material in a commercial press?

A. That has been altogether based on my experience with those twelve bricks or more that I made, and I found that the best brick which I could make was made with a low percentage of moisture.

Q. What size brick was it that you made?

A. It was about half the size of the briquet furnished by the company to the local customers.

Q. What kind of a press did you make it in?

A. We had a cylinder and a plunger and a vise.

Q. But you hadn't any experience with an actual commercial press, and as to the effect of different percentages of moisture in the loose carbon in the manufacture of brick in a commercial press.

A. I have no experience, no, sir.

Q. Was this two-inch brick that you made in the cylinder and plunger with one stroke of the compressor or one stroke of the plunger?

A. Yes, sir. The mould was something over twice as long as the brick made, and we filled it full, and then pressed it [723] as hard as we could in the vise.

Q. By continued pressure—increasing the pressure from time to time.

A. Yes, sir. Turned it up as hard as we could turn it, and then shoved it out.

Q. That would be a pretty slow process of making brick, if you had to make them by the ton, wouldn't

(Testimony of E. E. Chandler.)

it? A. Yes, sir.

Redirect Examination.

(By Mr. CHAPMAN.)

Q. I mean to ask the specific gravity of carbon.

A. It is from 1.45 to 1.7. That is, the amorphous variety.

Q. What do you mean by the amorphous variety?

A. There are three kinds of carbon; amorphous carbon, the diamond and graphite.

Q. What is this by-product?

A. It is amorphous carbon.

Q. (By Mr. GOUDGE.) There is one other question. Commercial lamp-black usually contains hydrocarbon as well as pure carbons?

A. You mean that which is given for binding purposes?

Q. Well, with such a lamp-black as the by-product of the manufacture of gas from petroleum oil?

A. Yes, sir, it contains hydrocarbons. [724]

[**Testimony of B. S. Pederson, for Defendant
(Recalled in Surrebuttal).]**

B. S. PEDERSON, recalled for defendant in surrebuttal, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. Did you observe the appearance of the seals during this test frequently? A. I did.

Q. Did you ever see any free oil or crude oil appearing there?

A. I did not. My observations were to the oppo-

(Testimony of B. S. Pederson.)

site effect. When the carbureter was taking care of the oil it usually shows in the seal-pot by showing a yellowish color in the water, and I frequently called the attention of the operator to the fact that the seal showed pretty good. At times a little tar substance would come over, and that would indicate that the apparatus was working properly, because the proper operation is to get your seal just running between tar and lamp-black without any oil. That is, in practical operation. No lamp-black, but a yellowish color on the water.

Q. In your testimony which appears on page 522, you were asked about the capacity of this machine with respect to fuel economy, and you answered that with properly made lamp-black fuel the machine would have the same capacity as coal or coke, and I don't believe you stated what the capacity of such a machine with coal or coke was. What is it?

A. The capacity of this machine with coal or coke, the generator would be largely in excess of the carbureter. But as it was originally made with the smaller grate area, the capacity with coal or coke would run up to say 30,000 feet per square foot of grate area.

Q. You misunderstand the question. You are talking about [725] fuel consumption. You say the machine would reach the same capacity as it would with coal or coke, but you didn't say in figures what it was.

A. The consumption with coal or coke will run from thirty to thirty-two pounds per thousand cubic feet made.

[**Testimony of O. M. Guldin, for Defendant
(Recalled in Surrebuttal).]**

O. M. GULDIN, recalled for defendant in rebuttal, testified as follows:

Direct Examination.

(By Mr. CHAPMAN.)

Q. When you were on the stand before, you expressed an opinion of the capacity of this machine in cubic feet of gas made per day. I will ask you to assume that this machine is operated for twenty consecutive operating days under the conditions that were described in your testimony when you expressed the opinion before. I ask you whether that fact—the basis of operation for twenty consecutive days—would affect your opinion as to the capacity which you gave.

A. It would not, if you had proper time for burning out.

Cross-examination.

(By Mr. GOUDGE.)

Q. What do you mean by proper time to burn off?

A. The custom such as in use, one day in seven, to clean your carbureter. If you are operating straight twenty-four hours daily operations.

Q. Isn't there any other proper time for burning off than one day in seven?

A. There are. It might be one day in ten or one day in six, assuming that you are running the machine continuously. [726]

Q. Now, running it for this twenty consecutive days with the proper time for burning off, what do

(Testimony of O. M. Guldin.)

you say is the capacity of this machine, in your opinion? A. In excess of three million feet per day.

Q. How much then, with that capacity would it produce in twenty days' consecutive run?

A. Twenty times three million. Twenty operating days.

Defendant rests.

Thereupon the case was argued before the Court.

[727]

The testimony hereinbefore contained constitutes all of the material testimony taken on the trial of the above-entitled action.

On the 6th day of November, 1911, the Court made and filed in said action the following findings of fact and conclusions of law and decision: [728]

*In the United States Circuit Court, Ninth Circuit,
Southern District of California, Southern Division.*

No. 1,558.

LOS ANGELES GAS & ELECTRIC CORPORATION
(a Corporation),

Plaintiff,

vs.

WESTERN GAS CONSTRUCTION COMPANY
(a Corporation),

Defendant.

Findings of Fact and Conclusions of Law.

This cause came on regularly for trial before the Court without a jury (a jury having been waived by the parties) on the 22d day of September, 1911, and

proceeded from day to day until the trial was completed on Wednesday, the 11th day of October, 1911, and the plaintiff was represented by its attorneys, Messrs. Herbert J. Goudge and LeRoy M. Edwards, and the defendant by its attorneys, Messrs. Oscar A. Trippet and Ward Chapman, and the evidence on behalf of plaintiff in support of its complaint as amended, and on behalf of the defendant in support of its answer, counterclaim and cross-complaint, having been adduced, and the cause having been argued and submitted to the Court, the Court being fully advised in the premises, now makes the following findings of fact, to wit:

I.

The allegation of the first, second, third and fourth paragraphs of the complaint as amended are true.

[729]

II.

It is true that on the 8th day of April, 1907, the Los Angeles Gas and Electric Company was desirous of purchasing a water-gas apparatus for the purpose of increasing the working capacity of its plant situated in the city and county of Los Angeles, State of California, for the production and generation of gas with the use of lamp-black, a by-product of its plant, for fuel; that defendant was informed of the needs and requirements of said Los Angeles Gas & Electric Company, and of the character of its plant, and the purpose for which it desired to purchase such water-gas set, to this extent:

That prior to said date and during the negotiations which led up to the making of the contract of April

8, 1907, set forth in the complaint herein, an agent of the defendant had various interviews with officers of said Los Angeles Gas & Electric Company, and was informed that said company desired to purchase a water-gas set for the purpose of manufacturing gas in such set by the use of lamp-black, a by-product of its plant, for fuel, and said agent of the defendant company also visited the plant of said Los Angeles Gas & Electric Company and was also by it supplied with samples of such fuel in the form of briquettes, and which briquettes were solidly and substantially compressed. And said defendant was also informed by said Los Angeles Gas & Electric Company, through defendant's said agent, during such negotiations, that the fuel to be used in said proposed apparatus would be of like quality, except that it would not necessarily be supplied in the form of briquettes of the size and shape of said samples, to wit, cylindrical in form of about $2\frac{1}{2}$ or 3 inches in diameter, but that said plaintiff was then negotiating for the purchase of a bricking machine, and would furnish said material in the form of bricks of about the size of ordinary building bricks, to wit, [730] about 8 inches in length, about 4 inches in width, and about 3 inches in thickness, or in the form of briquettes, but of the same quality as the said samples so submitted; that similar information was also given the said defendant by the said Los Angeles Gas & Electric Company in the form of correspondence which passed between them pending said negotiations, and said defendant was thereby informed that said Los Angeles Gas & Electric Company was also at said time nego-

tiating for the purchase of a drying apparatus by means of which it was anticipated that all of the said by-product from their said plant would be dried, so that the same should contain from 5% to not exceed 10% of moisture, and that after passing the drier the same would be bricked or briquetted for use in the generator as above set forth. That all knowledge of the defendant with respect to the conditions at the plant of said Los Angeles Gas & Electric Company and of the character and quality of said fuel was obtained as above set forth, and defendant relied thereon and entered into the said contract in reliance upon the information thus obtained and as above set forth.

Thereupon, defendant proposed to install and sell to said Los Angeles Gas and Electric Company an extended carbureter superheater water-gas apparatus of 2,700,000 to 3,000,000 cubic feet of gas per 24 hours a day capacity, to be used by said Los Angeles Gas & Electric Company for the production and generation of gas, which proposal was in writing, addressed to the Los Angeles Gas & Electric Company, and dated the 8th day of April, 1907, and is in the words and figures set forth in the complaint herein.

III.

That the Los Angeles Gas & Electric Company accepted said proposal in reliance in part upon the guaranties therein contained, and said parties did enter into the written contract [731] for the sale and manufacture of the apparatus described in said contract, and a copy of which together with the specifications accompanying the same, are set forth in the

complaint herein, and said Los Angeles Gas and Electric Company would not have entered into said contract except in reliance upon the guaranties therein contained.

IV.

Thereafter, defendant manufactured, at its plant in Fort Wayne, Indiana, all the parts of which said apparatus was composed, except the fire brick with which the generator was lined and the fire brick which lined the carbureter and superheater and composed the checker-work therein. And the said parts so manufactured at Fort Wayne, were delivered to the plant of the Los Angeles Gas & Electric Company in the city of Los Angeles, California, and the same were assembled, and the said apparatus consisting of an extended carbureter superheater water apparatus referred to in said contract of April 8, 1907, was installed, and said defendant claimed that the said apparatus was completed in accordance with said contract, and as the work of installing the same progressed, the Los Angeles Gas & Electric Company paid to the defendant on account of the purchase price from time to time the sums mentioned in the seventh paragraph of the complaint, and said sums have ever since been retained by the defendant herein. The said Los Angeles Gas & Electric Company claimed, and still claims, that it fully performed each and every and all of the conditions on its part under the said contract to be performed, but it has at all times been claimed by the defendant herein that said company did not fully or at all perform said contract in some of the substantial particulars

thereof, and a controversy arose after the completion of said apparatus between said companies as to whether either of them fully performed the obligations [732] undertaken by them respectively in the said contract.

V.

With respect to the issues raised by the allegations of the eighth paragraph of the complaint to the effect that after the installation and completion of the extended carbureter superheater water-gas apparatus provided for in the said contract of April 8, 1907, tests of the said apparatus were thereafter made, and to the effect that said apparatus never operated fully or completely or successfully or in any way approached or fulfilled the guaranties contained in the said contract, in the particulars set forth in the said eighth paragraph of said complaint and the denials of the said allegations in the answer of the defendant herein, the Court finds that a controversy arose between the said Los Angeles Gas & Electric Company and the defendant as to whether or not tests of the same were made, and whether or not the said apparatus did comply with the said guaranties; and at the trial of this cause it was agreed on behalf of both parties to this suit that the issues raised by the said allegations were not material to this controversy and no evidence was offered thereon.

VI.

It is not true that said apparatus as first constructed was during or at the time of the completion of any test thereof, or at any time after its construction, of no value to the Los Angeles Gas & Electric

Company by reason of the failure of said apparatus to perform according to the terms and guaranties of said contract, or for any other reason; but it is true that said company refused to acknowledge that said apparatus had been constructed or was completed in accordance with said contract, and refused to accept the same as in full compliance with the [733] said contract and said guaranties, and did refuse to pay the balance of the purchase price thereof, and did offer to permit defendant to remove the same upon repayment of the purchase money paid to it as aforesaid, and did notify defendant that the same was held subject to its disposition on that condition.

VII.

After the said apparatus was constructed as aforesaid, the Los Angeles Gas & Electric Company did demand of the defendant that it return to said Los Angeles Gas & Electric Company the money advanced and paid by it to the defendant herein, and upon the refusal of the defendant to return all or any part of said money said Los Angeles Gas & Electric Company commenced an action at law, on the 24th day of July, 1908, against the defendant herein in the Circuit Court of the United States, Ninth Circuit, Southern District of California, Southern Division, to recover the money so advanced to defendant for the alleged failure to perform the contract, and defendant was served with a copy of the complaint and summons in said cause, and appeared in the said court in response thereto.

VIII.

Thereafter, on or about the 1st day of July, 1909,

negotiations were undertaken between the said Los Angeles Gas & Electric Company and the defendant herein to adjust the controversy existing between them without further litigation, and thereafter on the 12th day of July, 1909, with the express intent and purpose of finally settling and disposing of the controversy and litigation which had arisen between them as aforesaid, the said parties entered into the contract set forth in the eleventh paragraph of the complaint herein.

After the execution of said contract and before the [734] commencement of this action, the action brought by said Los Angeles Gas & Electric Company against the defendant herein as hereinbefore found was dismissed by the plaintiff herein.

It is true that the Los Angeles Gas & Electric Company did fully and completely perform each and all the conditions upon its part to be performed under the contract of July 12, 1907, after the said contract was made and up until the time of the assignment of said contract to the plaintiff herein and the assumption of its obligations by the plaintiff herein.

IX.

The allegations of the twelfth and thirteenth paragraphs of the complaint are true.

X.

After the execution of said contract of July 12, 1909, the defendant made certain alterations in its said apparatus preparatory to making preliminary tests of the said apparatus for the purpose of ascertaining what changes it desired to make, and operate the said apparatus from about the 29th day of July,

1909, to about the 14th day of August, 1909, when it shut down said apparatus for the purpose of making such changes in the same as it desired to make.

XI.

The Court further finds that a final test of the said apparatus was commenced on the 10th day of March, 1910, and the said apparatus was operated continuously with the exception of three days when the said apparatus was shut down and was not in operation on the 14th, 15th and 16th of March, 1910, except for an inconsiderable period on the 14th and 16th of March, 1910, and on the morning of the 30th of March, 1910, at 6 o'clock [735] A. M. the said apparatus was shut down and not further operated; but it is not true that defendant notified plaintiff that the test was ended at that time, but, on the contrary, on the morning of the 30th day of March, 1910, the operator in charge of said apparatus for defendant, called on plaintiff, and plaintiff immediately demanded the removal of said apparatus and the repayment of the money paid to the defendant therefor, and refused to permit any further operation, test or demonstration of the said apparatus, notwithstanding defendant did then and there offer to proceed with the test of the said apparatus for any reasonable number of days for the purpose of demonstrating the actual capacity of said apparatus, and it offered to correct any defects in said apparatus which had resulted during the operation of the same and to make another test thereof as hereinafter found.

XII.

The Court further finds that during the operation of said apparatus from the 10th day of March to the 30th day of March, 1910, as aforesaid, the same did not produce an average of two million cubic feet per 24 hours for each and every day during said period, nor was the average consumption of lamp-black fuel during said time for each one thousand cubic feet of gas made, 35 pounds or less, but, on the contrary, said apparatus did during said time consume on an average of about 39.5 pounds of lamp-black fuel containing less than 10% moisture per thousand cubic feet of gas made, treating as consumption all of such lamp-black fuel that went into the generator without any deduction for unconsumed lamp-black fuel from said apparatus; nor did said apparatus during said time maintain an average of 20 candle-power for the gas produced, but did maintain an average candle-power of slightly over 19 candle-power. And it is true that the increased consumption of lamp-black by said apparatus [736] would necessarily increase the cost of production per thousand cubic feet of gas made over what the cost would be if only 35 pounds of lamp-black fuel or less were used per thousand cubic feet of gas made, but it is not true that said apparatus is or was of no value to plaintiff by reason of its failure to have produced on an average of not less than two million cubic feet of gas for each day of the said period, nor because of its failure during said period to consume 35 pounds or less of lamp-black fuel per thousand cubic feet of gas made or for any other cause.

The Court finds that it is not true that the failure on the part of said apparatus during said period to produce the average quantity of gas above referred to with the fuel consumption per thousand cubic feet above specified was without any fault on the part of the plaintiff, but on the contrary the Court finds that there never was a test of the said apparatus under the conditions prescribed by the said contract, and the failure to test the said apparatus as provided in said contract was due to the fault of plaintiff as hereinafter more particularly set forth.

XIII.

The Court finds that after the operation of the said machine during the said period, certain mechanical defects appeared in and about the apparatus, to wit, the charging floor was slightly raised or bulged due to the expansion of the top of the generator, and the top of the generator was in a leaky condition due to insufficient reinforced support, and one of the valves installed in the apparatus was of a temporary and unsatisfactory character. Also some of the brick work in the superheater had fallen down, and in other minor particulars certain defects appeared and required repairing, but the Court [737] finds it is not true that said apparatus was in a dilapidated condition, but all of said defects could readily have been corrected and were conditions not infrequently resulting from the operation of such apparatus in the natural and ordinary course of operation, and the Court finds that defendant did offer to correct all said imperfections, and to restore the said apparatus so that the same would be in first-class order.

if the said plaintiff would permit the said work to be done and would accept said apparatus or permit a test of the same under the terms and provisions of the contract, or would permit an operation or test of the same under the conditions provided in the contract for any reasonable period that might be desired by plaintiff, but plaintiff refused to accept the said apparatus or to permit any further operation of the same, but demanded that the same forthwith be removed from the premises.

Plaintiff did not fully or completely perform each and all the conditions upon its part under said contracts to be performed, but failed to perform its obligations under said contracts in the particulars herein set forth. Plaintiff has at all times claimed that said apparatus was the property of the defendant and that it held the same subject to its right to remove and dispose of the same, and has demanded that defendant remove the same and return to the plaintiff the sum of \$26,823.45 so paid by plaintiff's predecessor to the defendant as aforesaid, and defendant has failed and refused at all times to comply with said demand, but plaintiff has torn down said apparatus and removed the same from its premises at a cost of \$1500. [738]

XIV.

The allegations of the twenty-second paragraph of the complaint are not true.

XV.

The Court finds it is true that between July 12, 1909, and the first day of April, 1910, the defendant made changes and additions in and to said water-

gas set pursuant to the terms of the contract of July 12, 1909, but said changes and additions were not made at the special instance and request of plaintiff, or the Los Angeles Gas & Electric Company, but the same were made under and pursuant to the requirements of said contract of July 12, 1909, and not otherwise, and in making said changes did expend more than \$8,000, and it is true that defendant agreed to pay for the said apparatus the sum of \$35,694, provided the same was of the maximum capacity provided for in said contract of July 12, 1909, and it is true that only \$26,823.45 of said sum has been paid by plaintiff to the defendant, but it is not true that the difference between said sums, to wit, \$8,870.55, is now due and payable to defendant; and it is not true that said apparatus had an average capacity for twenty consecutive days of more than 2,700,000 cubic feet of gas per 24 hours, using not more than 35 pounds of the lamp-black fuel provided for in said contract, containing 10% or less of moisture per thousand cubic feet of gas made, and using not more than $4\frac{1}{2}$ gallons of oil per thousand cubic feet of gas made, and producing a good commercial gas fixed and noncondensable of not less than 20 candle-power. [739]

XVI.

The defendant did perform the obligations undertaken by it in said contracts, but did not bring said apparatus to the maximum capacity provided for in said contracts, but plaintiff did not perform the obligations undertaken by it in said contracts in this: that it did not, during said test, furnish lamp-black

fuel of the quality called for by said contract, but on the contrary the lamp-black fuel furnished defendant during said test contained from 10% to 15% of impurities in the form of tar and other hydrocarbons, and a small percentage of noncombustible ash, and which substances substantially diminished the gas-making efficiency of the fuel. But nevertheless, the said lamp-black fuel so furnished was the lamp-black resulting as a by-product in the manufacture of gas at the plant of plaintiff, and was the lamp-black material referred to in the contracts of the parties, and was in brick form, and did contain less than 10% of moisture, and was in compliance with the contract except as hereinafter set forth. But the said bricks so furnished had been prepared by being compressed with moisture largely in excess of 10%, and the moisture then driven out leaving voids therein, and had been insufficiently compressed, and were so unstable that they were not able to withstand, and did not withstand the jarring necessarily incident to handling the same for fuel purposes in such apparatus. Notwithstanding the protests of the defendant during said test, plaintiff did furnish to defendant bricks which had been and were being throughout the entire test, subjected to external artificial heat or kiln-drying for the purpose of driving out moisture therefrom, and did also furnish considerable quantities of bricks which were still warm from said fires, which rendered them unstable and easily disintegrated and practically all the brick furnished to defendant during said [740] test were of such an unsubstantial character that

great quantities of them were necessarily broken up and crumbled in the handling of them, and that this crumbling and powdering took place to such an extent as that great quantities of fine pulverized and crumbled material unavoidably found its way into the generator, with the result that the fuel bed was packed and its efficiency largely impaired, and with the further result that excessive and extraordinarily large quantities of dust were blown over from the generator into the carbureter, and tended to form a deposit upon the brickwork in the carbureter, and to materially retard its function and impair its capacity.

Throughout said test plaintiff continued to supply bricks of the character above described, to wit, so entirely lacking in firmness and stability as that practically all of them broke more or less in handling, and great quantities crumbled and pulverized to such an extent that at times more than one-third, and almost constantly as much as 15% or 20% was screened out as waste, and at least as much more unavoidably went into the generator with the serious detrimental effects above described.

It is the custom of the plaintiff company in the operation of its other water-gas sets installed upon its premises, and was at the time the original contract involved in this case was made, and has been at all times, to shut down all of its apparatus for one day in each seven for the purpose of burning out and cleaning out the apparatus, and especially to burn off the deposits or accumulations on the fire-brick in the carbureter, and in the operation of all

gas apparatus it is customary and necessary to adopt some interval for this purpose, either by taking a portion of each day for that purpose, or electing to cease operating for a sufficient interval at stated periods varying to a considerable extent according to the conditions under which the apparatus is operated, but a burning [741] and cleaning out period of one day out of seven is a proper, practicable and reasonable custom in the operation of such a water-gas set as is involved here.

Defendant, prior to the commencement of the test, and while the test was in progress, notified the plaintiff that it understood that it would be permitted to follow the custom of cleaning and burning out one day in each week during the test, and requested plaintiff to accede to that understanding, but plaintiff at all times refused to do so, and notified defendant that no credit would be allowed for any time during which the machine was not in operation during said test. Such being the announced attitude of plaintiff, defendant did not adopt the practice of closing the said apparatus once a week during the said test, but except for three days when the apparatus was idle during the rebricking of the carbureter as aforesaid, the apparatus was operated continuously until the morning of the 30th of March, 1910. The average quantity of gas produced per 24 hours during the seventeen days on which the apparatus was actually operated was slightly in excess of two million cubic feet per day, but the average for the 20 days from the 10th of March to the 30th was about 1,700,000 cubic feet per day. About 39½ pounds of

lamp-black fuel was consumed to each thousand cubic feet of gas made, but less than $4\frac{1}{2}$ gallons of oil was consumed per thousand cubic feet. But as hereinbefore found, a test of 20 or more consecutive days was never had of the said apparatus with fuel of the character and quality provided to be furnished by the plaintiff to the defendant in the said contract, nor was the test of the said apparatus carried on from the 10th to the 30th of March as aforesaid such a test as the contract provided for, nor was the same such a test as would properly or fairly indicate or determine the capacity or economy of operation of said apparatus [742] for 20 or more consecutive days, or as a permanent operating apparatus or otherwise.

The Court further finds that during the said test defendant repeatedly protested against the character of the bricks so furnished, and did request plaintiff to furnish bricks of a more substantial or firm character, but plaintiff refused to comply with said request.

XVII.

The Court further finds that defendant has not been damaged in the sum of \$10,000, nor is there due from plaintiff to defendant the additional sum of \$18,210.95, or any other sum, nor did the said apparatus have a capacity in excess of 2,000,000 cubic feet of gas per twenty-four hours of the kind of gas prescribed in the contract of July 12, 1909, and with the fuel economies therein specified.

As the conclusions of law from the foregoing findings, the Court concludes:

1. That plaintiff is not entitled to recover the amount of money prayed for in its complaint herein, nor any sum, and that it take nothing against said defendant.

2. That defendant is not entitled to recover from the plaintiff the sum of money prayed for in its cross-complaint herein, and that it take nothing by its said cross-complaint.

3. Neither party is entitled to recover costs against the other herein. [743]

Let judgment be entered accordingly.

OLIN WELLBORN,

Judge. [744]

Whereupon judgment was entered in accordance therewith on said 6th day of November, 1911.

To the following portions of the said findings of fact, conclusions of law and decision of the Court, the said plaintiff, the Los Angeles Gas & Electric Corporation, did on the 6th day of November, 1911, except, to wit:

[Exceptions to Findings, etc.]

To the following finding of the Court:

“And said defendant was also informed by said Los Angeles Gas and Electric Company, through its said agent, during said negotiations, that the fuel to be used in said proposed apparatus would be of like quality.”

And the following finding that:

It (Los Angeles Gas and Electric Corporation) “would furnish said material in the form of bricks about the size of ordinary building bricks, to wit, about 8 inches in length, about 4 inches in width and

3 inches in thickness, or in the form of briquets."

And to the following finding that:

The said plaintiff would furnish fuel to the defendant "of the same quality as the said samples so submitted."

And to the following finding that:

"Similar information was also given the said defendant by the Los Angeles Gas and Electric Company in the form of correspondence which passed between them, pending said negotiations." [745]

And to the following finding that:

The lamp-black by-product of the Los Angeles Gas and Electric Company's plant, after having been dried to a degree of moisture of less than ten per cent, "would be bricked or briqueted for use in the generator, as above set forth."

And to the following finding that:

"All knowledge of the defendant, with respect to the conditions at the plant of the said Los Angeles Gas and Electric Company, and of the character and quality of said fuel, was obtained as above set forth."

And to the following finding that:

"Defendant relied thereon and entered into the said contract in reliance upon the information thus obtained as above set forth."

And to the following finding that:

"The defendant claimed that the said apparatus was completed in accordance with the said contract."

And to the following finding that:

"It has at all times been claimed by the defendant herein that said Company" (Los Angeles Gas and Electric Company) "did not fully or at all per-

form said contract in some of the substantial particulars thereof."

And to all of the findings set forth in paragraph V. of the findings, and to each and every particular thereof. [746]

And to the following finding that:

"It is not true that said apparatus as first constructed was during or at the time of the completion of any test thereof, or at any time after its construction, of no value to the Los Angeles Gas and Electric Company by reason of the failure of said apparatus to perform according to the terms and guarantees of said contract, or for any other reason."

And to the following finding that:

The said apparatus of the defendant was "not in operation on the 14th, 15th and 16th days of March, 1910, except for an inconsiderable period on the 14th and 16th of March, 1910."

And to the following finding that:

"It is not true that the defendant notified plaintiff that the test was ended at that time" (6 o'clock A. M. of March 30th, 1910).

And to the following finding that:

"Defendant did then and there" (March 30th, 1910) offer to proceed with the test of the said apparatus for any reasonable number of days for the purpose of demonstrating the actual capacity of said apparatus."

And to the following finding that:

"It offered to correct any defects in said apparatus which had resulted during the operation of the same."

And to the following finding that:

The defendant at said time offered "to make another test thereof." [747]

And to the following finding that:

"It is not true that said apparatus is or was of no value to plaintiff by reason of its failure to produce on an average of not less than 2,000,000 cubic feet of gas for each day of the said period; nor because of its failure during the said period to consume 35 pounds or less of lamp-black fuel per thousand cubic feet of gas made or for any other cause."

And to the following finding that:

"It is not true that the failure on the part of the said apparatus during said period to produce the average quantity of gas above referred to with the fuel consumption per thousand cubic feet above specified was without any fault on the part of the plaintiff."

And to the following finding that:

"There never was a test of said apparatus under the conditions prescribed by the said contract."

And to the following finding that:

"The failure to test the said apparatus, as provided in said contract was due to the fault of the plaintiff."

And to the following finding that:

"It is not true that said apparatus was in a dilapidated condition."

And to the following finding that:

"All of said defects could readily have been corrected."

And to the following finding that:

The said defects "were conditions not infrequently resulting from the operation of such apparatus in the natural and ordinary course of operation." [748]

And to the following finding that:

"The defendant did offer to correct all of the said imperfections."

And to the following finding that:

"The defendant did offer to restore the said apparatus so that the same would be in first-class order, if the plaintiff would permit the said work to be done, and would accept the said apparatus, or permit a test of the same under the terms and conditions of the contract"; or would permit any operation or test of the same under the conditions provided in the contract for any reasonable period that might be desired by plaintiff."

And to the following finding that:

"Plaintiff did not fully or completely perform each and all the conditions upon its part under said contracts to be performed."

And to the following finding that:

Plaintiff "failed to perform its obligations under said contracts in the particulars herein set forth."

And to the following finding that:

"The allegations of the twenty-second paragraph of the complaint are not true."

And to the following finding that:

"The defendant did perform the obligations undertaken by it in said contracts." [749]

And to the following finding that:

"The defendant did perform the obligations under-

taken by it under the contract of July 12th, 1909.”

And to the following finding that:

The “plaintiff did not perform the obligations undertaken by it in said contracts.”

And to the following finding that:

“Plaintiff did not during the said test furnish lamp-black fuel of the quality called for by said contract.”

And to the following finding that:

“The lamp-black fuel furnished defendant during said test contained from ten to 15 per cent of impurities in the form of tar, or other hydrocarbons, and a small percentage of noncombustible ash.”

And to the following finding that:

Said tar and hydrocarbons and noncombustible ash “diminished the gas-making efficiency of the fuel.”

And to the following finding that:

“The lamp-black fuel furnished by the plaintiff to the defendant during said test was not fuel of the kind and character specified and provided for in the contract of July 12, 1909.”

And to the following finding that:

“The lamp-black bricks furnished by the plaintiff to the defendant during said final test had been treated [750] in such a manner as to leave voids therein.”

And to the following finding that:

The said fuel “had been insufficiently compressed.”

And to the following finding that:

The said fuel furnished by the plaintiff to the defendant during said final test was “so unstable that

they were not able to withstand the jarring necessarily incident to the handling of the same for fuel purposes in such apparatus."

And to the following finding that:

"Notwithstanding the protests of the defendant during said test, plaintiff did furnish to defendant bricks which had been and were being throughout the entire test, subjected to external artificial heat or kiln-drying for the purpose of driving out moisture therefrom."

And to the following finding that:

"The plaintiff did furnish the defendant during said test bricks which were unstable and easily disintegrated."

And to the following finding of the Court:

"Practically all the brick furnished to defendant during said test were of such an unsubstantial character that great quantities of them were necessarily broken up and crumbled in the handling of them."

And to the following finding that:

"This crumbling and powdering took place to such an extent as that great quantities of fine pulverized and crumbled material unavoidably found its way into the generator, [751] with the result that the fuel bed was packed and its efficiency largely impaired, and with the further result that excessive and extraordinarily large quantities of dust were blown over from the generator into the carbureter, and tended to form a deposit upon the brick work in the carbureter and to materially retard its function and impair its capacity."

And to the following finding that:

"Throughout said test plaintiff continued to supply bricks of the character above described, to wit, so entirely lacking in firmness and stability as that practically all of them broke more or less in handling."

And to the following finding that:

"Great quantities" (of the bricks furnished by the plaintiff) "crumbled and pulverized to such an extent that at times more than one-third, and almost constantly as much as 15 per cent or 20 per cent was screened out as waste."

And to the following finding that:

"At least as much more" (of the waste) "unavoidably went into the generator with the serious detrimental effects above described."

And to the following finding that:

"In the operation of all gas apparatus it is customary and necessary to shut down the said apparatus at some regular interval for the purpose of burning out and cleaning out the apparatus." [752]

And to the following finding that:

"A burning out and cleaning out period of one day out of seven is a proper, practical and reasonable custom in the proper operation of such a water-gas set as is involved here."

And to the following finding that:

"The average quantity of gas produced per 24 hours during the 17 days on which the apparatus was actually operated was slightly in excess of 2,000,000 cubic feet per day."

And to the following finding that:

"A test of 20 or more consecutive days was never

had of the said apparatus."

And to the following finding that:

"A test of 20 or more consecutive days was never had of the said apparatus with fuel of the character and quality to be furnished by the plaintiff to defendant under the said contract" (of July 12th, 1909).

And to the following finding that:

"Nor was the test of the said apparatus carried on from the 10th to the 30th of March, as aforesaid, such a test as the contract provided for."

And to the following finding that:

"Nor was the same such a test as would properly or fairly indicate or determine the capacity or economy of operation of said apparatus for 20 or more consecutive days, or as a permanent operating apparatus or otherwise." [753]

And to the following finding that:

"During the said test defendant repeatedly protested against the character of the brick furnished."

And to the following finding that:

Defendant "did request plaintiff to furnish bricks of a more substantial or firm character."

And to the following finding that:

"The plaintiff is not entitled to recover of the defendant the sum of \$28,323.45.

And the said plaintiff, Los Angeles Gas and Electric Corporation, did, at said time, except to the failure of the Court to find and decide that the plaintiff is entitled to judgment against the defendant in the sum of \$28,323.45.

And to the failure of the Court to enter judgment

against the said defendant in favor of the plaintiff for the said sum of \$28,323.45.

And the said plaintiff, the Los Angeles Gas and Electric Corporation, did, at said time, except to the failure of the Court to find and decide that the plaintiff is entitled to judgment against the defendant in the sum of \$26,323.45.

And to the failure of the Court to enter judgment against the said defendant and in favor of the plaintiff in the said sum of \$26,323.45.

And to the failure of the Court to find that all of the lamp-black fuel furnished and supplied by the plaintiff to defendant during the final test of said apparatus was fuel in accordance with the contract of July 12th, 1909.

And to the failure of the Court to find that the operation of said water-gas apparatus by the defendant during the period from March 10th to March 30th, 1910, was a final 20-day test of said apparatus, as contemplated and provided for in said contract of July 12th, 1909. [754]

And to the failure of the Court to find that the defendant during said final test of said apparatus from March 10th to March 30th, 1910, inclusive failed to bring its said water-gas apparatus to an established capacity, as provided in said contract of July 12th, 1909, of at least 2,000,000 cubic feet of gas per 24 hours.

And to the failure of the Court to find that during said period, to wit, from March 10th to March 30th, 1910, said defendant failed to bring said apparatus to an established capacity of producing gas with the

consumption of not more than 35 pounds of lamp-black fuel per thousand cubic feet of gas made.

And to the failure of the Court to find that during said final test of said apparatus from March 10th to March 30th, 1910, inclusive, the defendant failed to bring said apparatus to an established capacity of producing during said period gas of an average candle-power of at least 20 candles.

And to the failure of the Court to find that the plaintiff had at all times performed all the conditions and obligations imposed upon it by and under said contract of July 12th, 1909.

All of the said exceptions were allowed by said Court on said 6th day of November, 1911.

By written stipulation between the plaintiff and the defendant, duly filed in said action, and by order of said Court, duly made and entered therein, it was stipulated and ordered [755] on the 10th day of November, 1911, that the said plaintiff have to and including the 2d day of January, 1912, in which to serve and file its proposed bill of exceptions for use on its Writ of Error and Appeal herein.

That thereafter and on the 29th day of December, 1911, the plaintiff duly served and filed its said proposed bill of exceptions, and thereafter, by written stipulation between the plaintiff and the defendant, duly filed in said action, and by order of said Court duly made and entered therein, it was stipulated and agreed that the defendant might have to and including the 15th day of March, 1912, within which to serve and file its proposed amendments to the said proposed bill of exceptions of the plaintiff, and that

thereafter, to wit, on the 8th day of March, 1912, the defendant duly served and filed its proposed amendments to the said proposed bill of exceptions of the plaintiff, and that thereafter, to wit, on the 9th day of March, 1912, the plaintiff served upon the defendant and filed in the above-entitled court its written notice of dissent to the defendant's said proposed amendments, and at said time gave the said defendant written notice that the settlement of said bill of exceptions would be duly called for hearing before the above-entitled court at the courthouse, city of Los Angeles, on March 12th, 1912, at 10 o'clock A. M. That at said time the attorneys for the plaintiff and defendant in the above-entitled action appeared before the above-entitled court and the settlement of said proposed bill of exceptions was thereupon commenced, and on the 14th day of March, 1912, the settlement of said bill of exceptions was duly made and completed by the above-entitled court, and the engrossment of said bill of exceptions as settled and allowed was by the said Court ordered to be made. That thereupon, by written stipulation between the plaintiff and the defendant duly filed [756] in said action, and by order of said Court duly made and entered therein, it was stipulated and ordered on the 15th day of March, 1912, that the said plaintiff have to and including the 22d day of March, 1912, in which to engross and file its said engrossed bill of exceptions in the above-entitled cause and obtain the allowance thereof by the Court.

Now, therefore, in accordance therewith, and in furtherance of justice and that right may be done,

the plaintiff, Los Angeles Gas and Electric Corporation, presents the foregoing as its engrossed bill of exceptions in this case, and prays that the same may be settled and allowed, and signed and certified by the Judge as provided by law.

WM. A. CHENEY,
HERBERT J. GOUDGE,
LEROY M. EDWARDS,
Attorneys for Plaintiff.

[Order Approving Bill of Exceptions.]

The foregoing engrossed bill of exceptions is correct in all respects, and is hereby approved, allowed and settled and made a part of the record herein.

Done at Chambers, and dated this 22d day of March, 1912.

OLIN WELLBORN,
Judge. [757]

IT IS HEREBY STIPULATED AND AGREED that the foregoing engrossed bill of exceptions be settled and allowed, signed by the Court and made a part of the record in the above-entitled action, for use by plaintiff on its Writ of Error and appeal to be taken herein, and that the same is in all respects correct.

Dated March 21st, 1912.

WM. A. CHENEY,
HERBERT J. GOUDGE,
LEROY M. EDWARDS,
Attorneys for Plaintiff.

OSCAR A. TRIPPET,
WARD CHAPMAN,
Attorneys for Defendant. [758]

*In the District Court of the United States in and for
the Southern District of California, Southern
Division.*

LOS ANGELES GAS AND ELECTRIC COR-
PORATION, a Corporation,

Plaintiff,

vs.

THE WESTERN GAS CONSTRUCTION COM-
PANY, a Corporation,

Defendant.

**Petition for Writ of Error and Supersedeas by the
Plaintiff, Los Angeles Gas and Electric Corpora-
tion.**

Comes now the Los Angeles Gas and Electric Corporation, a corporation, plaintiff in the above-entitled cause, by Wm. A. Cheney, Esq., Herbert J. Goudge, Esq., and LeRoy M. Edwards, Esq., its attorneys, and, feeling itself aggrieved by the decision and judgment rendered and entered by the Circuit Court of the United States, in and for the Southern District of California, on the 6th day of November, 1911, petitions the above-entitled court for an order allowing said plaintiff to prosecute a writ of error to the United States Circuit Court of Appeals, Ninth Circuit, under and according to the laws of the United States in that behalf made and provided.

That a transcript of the records, proceedings and papers on which said judgment was made and entered, duly authenticated, may be sent to the United States Circuit Court of Appeals for the Ninth Circuit, and also that an order be made fixing the

amount of the security which the plaintiff shall give and furnish upon said writ of error, and upon giving said security, all further proceedings of this court be suspended and stayed until the determination of said [759] writ of error by the United States Circuit Court of Appeals for the Ninth Circuit.

And your petitioner will ever pray, *et cetera.*

Dated March 25, 1912.

WM. A. CHENEY,
HERBERT J. GOUDGE,
LEROY M. EDWARDS,

Attorneys for Plaintiff, Los Angeles Gas and Electric Corporation.

[Endorsed]: C. C. No. 1558. Dept. In the District Court of the United States, in and for the Southern District of California. Los Angeles Gas and Electric Corporation, a Corporation, Plaintiff, vs. The Western Gas Construction Company, a Corporation, Defendant. Petition for Writ of Error and Supersedeas. Filed Mar. 25, 1912. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. Wm. A. Cheney, Herbert J. Goudge, LeRoy M. Edwards, 645 South Hill Street, Room 31, Los Angeles, Cal., Attorneys for Plaintiff. [760]

ASSIGNMENT OF ERRORS. [761]

*In the District Court of the United States in and for
the Southern District of California, Southern
Division.*

LOS ANGELES GAS AND ELECTRIC COR-
PORATION, a Corporation,

Plaintiff,

vs.

THE WESTERN GAS CONSTRUCTION COM-
PANY, a Corporation,

Defendant.

Assignment of Errors.

Comes now the plaintiff, the Los Angeles Gas and Electric Corporation, and files the following Assignment of Errors, upon which it will rely upon its prosecution of its Writ of Error in the above-entitled case, to wit:

I.

Said Circuit Court of the United States, Ninth Circuit, Southern District of California, Southern Division, erred in giving, making, rendering, and entering judgment in the above-entitled case in favor of the defendant and against the plaintiff.

II.

The said Court erred in failing to give, make, render and enter judgment in the above-entitled cause in favor of the plaintiff and against the defendant in the sum of \$28,323.45.

III.

The said Court erred in making and filing the fol-

lowing [762] portion of finding No. II, as follows:

"And said defendant was also informed by said Los Angeles Gas and Electric Company, through defendant's said agent, during such negotiations, that the fuel to be used in said proposed apparatus would be of like quality," to wit, solid and substantially compressed (as the sample of briquet fuel furnished to the defendant's agent by the said Los Angeles Gas and Electric Company, prior to April 8th, 1907).

It appears from the evidence that the defendant was not, prior to the 8th day of April, 1907, or at any other time, informed by the Los Angeles Gas and Electric Company, through any of its agents or otherwise, that the fuel to be used in the said proposed water-gas apparatus of the Western Gas Construction Company would have a solidity or tensile strength to or greater than that possessed by the sample of briquet furnished to the defendant by the Los Angeles Gas and Electric Company prior to April 8th, 1907. On the contrary, the evidence shows that prior to the 8th day of April, 1907, the defendant was furnished by the Los Angeles Gas and Electric Company with a lamp-black briquet about two inches in diameter, and that the only representation made to the defendant prior to the entering into of the contract of April 8th, 1907, was that the lamp-black fuel which would be furnished to the defendant for the operation of the water-gas set under said contract would be lamp-black fuel having a chemical composition and quality equal to the chemical composition and quality of the lamp-black

briquet furnished to the defendant, and that at the time of supplying the defendant with said lamp-black briquet, [763] the said Los Angeles Gas and Electric Company specifically informed the defendant that the lamp-black fuel would not be furnished to the defendant in the size or form of the briquet, and neither stated to the defendant nor gave it any reason to expect or believe that the lamp-black fuel to be furnished to the defendant under said contract of April 8th, 1907, would possess a tensile strength or stability equal to or greater than that of said lamp-black briquet furnished to it.

The evidence is insufficient to support the said finding in the respects mentioned.

IV.

The said Court erred in making and filing the following portion of finding No. II, as follows:

That the Los Angeles Gas and Electric Company "would furnish said material in the form of bricks of about the size of ordinary building bricks, to wit, about 8 inches in length, about 4 inches in width and 3 inches in thickness, or in the form of briquets."

It appears from the evidence that on the 5th day of March, 1907, the Los Angeles Gas and Electric Company wrote a letter to the defendant, as follows:

"We are now negotiating for the purchase of a dryer to handle all of our brick, and anticipate that this [764] dryer will turn out our carbon with from 5 per cent to not to exceed 10 per cent of moisture. After passing the dryer, the same will be bricked for use in the generators."

Other than the aforesaid statement, there was no

agreement upon the part of the Los Angeles Gas and Electric Company that the said lamp-black fuel would be furnished to the defendant in the form of bricks.

The evidence is insufficient to support said finding in the respects mentioned.

V.

The said Court erred in making and filing the following portion of finding No. II, as follows:

That the said Los Angeles Gas and Electric Company, prior to April 8th, 1907, informed the defendant that the lamp-black fuel which would be furnished to the defendant for the operation of its water-gas machine would be "of the same quality as the said samples so submitted."

It appears from the evidence that at no time did the Los Angeles Gas and Electric Company inform the defendant, or state to it, that the lamp-black fuel which would be furnished to it for the operation of its water-gas apparatus would have the tensile strength or stability or solidity equal to or greater than that of the lamp-black briquet sample supplied to the defendant by the said Los Angeles Gas and Electric Company. On the contrary, it appears from the evidence that the only representation or statement made by the Los Angeles Gas and Electric Company prior to April 8th, 1907, or at any other time, in comparing the fuel which would [765] be furnished to defendant with the lamp-black sample which was furnished to it, was the statements by the Los Angeles Gas and Electric Company to the effect that the chemical constituency of the lamp-black

fuel to be furnished would be the same as that of the lamp-black briquet furnished; but no statement or representation was made as to the tensile strength or stability of the proposed fuel to be furnished to the defendant.

The evidence is insufficient to support the said finding in the respects mentioned.

VI.

The said Court erred in making and filing the following portion of finding No. II, as follows.

“That similar information was also given the said defendant by the said Los Angeles Gas and Electric Company” (referring to information as to the quality of the lamp-black fuel which would be furnished as to stability) “in the form of correspondence which passed between them pending said negotiations.”

It appears from the evidence that in none of the written correspondence passing between the Los Angeles Gas and Electric Company and the defendant was any mention made of what would be the character of the lamp-black fuel which [766] would be furnished and supplied to the defendant during the operation and testing of its said apparatus as to tensile strength, or stability or solidity; but all of the written correspondence referring to said lamp-black was confined solely to the discussion of the chemical constituency of said lamp-black and to its moisture content.

The evidence is insufficient to support the said finding in the respects mentioned.

VII.

The Court erred in making and filing the following portion of finding No. II, as follows:

"That all knowledge of the defendant with respect to the conditions at the plant of said Los Angeles Gas and Electric Company and of the character and quality of said fuel was obtained as above set forth."

It appears from the evidence that B. S. Pederson, agent of the said defendant, had for several years prior to April, 1907, resided on the Pacific Coast, and was familiar with the by-product of oil-gas manufacture, known as lamp-black; and from the written correspondence introduced in evidence which passed between the parties to the contract, it is shown that the defendant company, through its agent, Mr. Pederson, obtained information as to the gas-making qualities and character of lamp-black, as a by-product of oil-gas manufacture, from sources other than the information received from the agents of the Los Angeles Gas and Electric Company, and from the briquet samples supplied by the said Los Angeles Gas and Electric Company to the defendant. [767] And the evidence shows that before the defendant was willing to enter into the contract of April 8th, 1907, it received from and acted upon information from Mr. Pederson as to his own opinion and knowledge of the character and value of lamp-black as a fuel for water-gas manufacture.

The evidence is insufficient to support said finding in the respect mentioned.

VIII.

The Court erred in making and filing the following portion of finding No. II, as follows:

“Defendant relied thereon” (information received from the Los Angeles Gas and Electric Company, and the samples of lamp-black briquets furnished by said company to defendant) “and entered into the said contract in reliance upon the information thus obtained, and as above set forth.”

It appears from the evidence that the defendant entered into the contract of April 8th, 1907, relying only partially upon the information obtained by its agents from the Los Angeles Gas and Electric Company. The evidence further shows that before the defendant company would consent to enter into the contract of April 8th, 1907, it desired to obtain, and did obtain, from its agent, B. S. Pederson, a vast amount of information which he had gained through his experience as their representative of the Pacific Coast from sources other than that of the Los Angeles Gas and Electric Company. [768]

The evidence is insufficient to support the said finding in the respects mentioned.

IX.

The Court erred in making and filing the following portion of finding No. IV as follows:

That subsequent to April 8th, 1907, and prior to July 12th, 1909, “said defendant claimed that the said apparatus was completed in accordance with said contract.”

It appears from the evidence that at no time between the 8th day of April, 1907, and July 12th, 1909,

did the defendant claim or assert in writing or orally to the Los Angeles Gas and Electric Company, or to any other person, that the said apparatus was completed in accordance with said contract. To the contrary, the evidence shows that at no time prior to the said 8th day of April, 1907, did the said apparatus ever produce as much as 2,000,000 cubic feet of gas per 24 hours, and that the balance of the purchase price, payable within 35 days after the completion of the said apparatus, was never requested of the Los Angeles Gas and Electric Company by the defendant.

The evidence is insufficient to support the said finding in the respect mentioned. [769]

X.

The Court erred in making and filing the following portion of finding No. IV as follows:

“It has at all times been claimed by the defendant herein that said company” (Los Angeles Gas and Electric Company) “did not fully or at all perform said contract in some of the substantial particulars thereof.”

It appears from the evidence that at no time prior to the 12th day of July, 1909, did the defendant complain, or even claim or assert that the said Los Angeles Gas and Electric Company had, in any respect or at any time, failed to perform all the conditions and obligations upon its part to be performed under said contract of April 8th, 1907. On the contrary, the evidence shows that the said apparatus of the defendant had, at all times prior to the said 12th day of July, 1909, failed without any fault on the part of the Los Angeles Gas and Electric Company, to at-

tain any of the fuel economies or the capacity to produce even 2,000,000 cubic feet of gas per day of 24 hours, as provided for in said contract of April 8th, 1907; and that the said defendant did not, at any time, attribute the said failure of the said apparatus to any act or fault upon the part of the Los Angeles Gas and Electric Company, to perform its obligations under said contract of April 8th, 1907.

The evidence is insufficient to support the said finding in the respects mentioned. [770]

XI.

The Court erred in making and filing finding No. V as follows:

"With respect to the issues raised by the allegations of the eighth paragraph of the complaint to the effect that after the installation and completion of the extended carbureter superheater water-gas apparatus, provided for in the said contract of April 8th, 1907, tests of the said apparatus were thereafter made and to the effect that said apparatus never operated fully or completely or successfully or in any way approached or fulfilled the guaranties contained in the said contract, in the particulars set forth in the said eighth paragraph of said complaint and the denials of the said allegations in the answer of the defendant herein, the Court finds that a controversy arose between the said Los Angeles Gas and Electric Company and the defendant as to whether or not tests of the same were made, and whether or not the said apparatus did comply with the said guaranties; and at the trial of this cause it was agreed on behalf of both parties to this suit that

the issues raised by the said allegations were not material to this controversy, and no evidence was offered thereon."

It appears from the evidence that the plaintiff repeatedly throughout the trial of this case, attempted and endeavored to show and prove that at all times prior to the 12th day of July, 1909, the defendant failed to bring its said water-gas apparatus to the operative efficiencies set forth in said contract of April 8th, 1907, and that the trial Court refused at all times to receive said evidence in evidence upon the objection interposed by the defendant, and not by reason of any agreement upon the part of the plaintiff that [771] said evidence was not material to this controversy.

The evidence is insufficient to support the finding in the respects mentioned.

XII.

The Court erred in making and filing the following portion of finding No. XI as follows:

The said apparatus of the defendant was "not in operation on the 14th, 15th and 16th days of March, 1910, except for an inconsiderable period on the 14th and 16th of March, 1910."

It appears from the evidence that the apparatus of the defendant was in operation continuously from the 10th to the 30th of March, 1910, inclusive. The evidence further shows that such time as was taken by the defendant on the 14th, 15th and 16th of March, 1910, for the purpose of cleaning out the checker-work of said apparatus is, according to gas-making practice, deemed part of the operation of a

water-gas apparatus, although during such time the machine was not actually producing gas.

The evidence is insufficient to support the finding in the respects mentioned. [772]

XIII.

The Court erred in making and filing the following portion of finding No. XI as follows:

"It is not true that the defendant notified plaintiff that the test was ended at that time" (March 30th, 1910, at 6 o'clock A. M.)

It appears from the evidence that the defendant did notify the plaintiff that it had concluded its test of the said water-gas apparatus on the 30th day of March, 1910, at 6 o'clock A. M. The evidence shows that prior to the commencement of said final test on the 10th day of March, 1910, that the defendant notified the plaintiff in writing on the 28th day of February, 1910, as shown by Plaintiff's Exhibit 16, that on the morning of March 10th, 1910, the defendant would "begin the final 20-day test of the water-gas apparatus now at your plant, as provided for in the contract between your company and the Western Gas Construction Company, dated July 12th, 1909," that at 6 o'clock A. M. on said 10th day of March, 1910, the defendant did commence the final test and operation of said apparatus and continued the same for the next twenty days, consecutively, and did, of its own accord, on the 30th day of March, 1910, at 6 o'clock A. M. cease operation of said water-gas apparatus; that at said time the plaintiff did have on hand at said apparatus the necessary fuel, labor and other material to have enabled defendant to have

continued the operation of said apparatus had it so desired; that on said 30th day of March, 1910, within a few hours after said 6 o'clock A. M. of said day, the representative of the defendant presented himself at the office of the said Los Angeles Gas [773] and Electric Corporation, and stated that the said defendant had completed said final test of said apparatus.

The evidence is insufficient to support the finding in the respect mentioned.

XIV.

The Court erred in making and filing the following portion of finding No. XI as follows:

"Defendant did, then and there" (March 30th, 1910) "offer to proceed with the test of the said apparatus for any reasonable number of days for the purpose of demonstrating the actual capacity of said apparatus."

It appears from the evidence that the defendant did not, on said March 30th, 1910, offer to proceed with the test of said apparatus for any reasonable number of days, for the purpose of demonstrating the actual capacity of said apparatus. On the contrary, the evidence shows that after ceasing the operation of said apparatus on the 30th day of March, 1910, the representative of the defendant stated to the plaintiff that the apparatus was in such a condition that the generator head had to be reinforced by new I-beams, as the same was leaking, that the carbureter and superheater had to be entirely rechecked and lined with bricks, and various other changes made before the operation of said

apparatus could continue. And the evidence shows that the only representation made by the defendant of its willingness to continue the operation of said apparatus was an expression of their willingness to so continue if the plaintiff would allow the defendant time to make all of the said [774] changes and repairs upon said apparatus, and that then the defendant would be glad to make another demonstration of the said apparatus; but no offer was made by the defendant to immediately continue the operation of said apparatus.

The evidence is insufficient to support the finding in the respects mentioned.

XV.

The Court erred in making and filing the following portion of finding XI, as follows:

Defendant, "offered to correct any defects in said apparatus which had resulted during the operation of the same."

It appears from the evidence that on the 30th day of March, 1910, the defendant offered to correct any defects which had resulted in said apparatus during its operation solely upon the condition and agreement upon the part of the plaintiff, that it would then and there accept the said apparatus, or that it would permit the defendant to commence to make another and additional test of said apparatus.

The evidence is insufficient to support the finding in the respects mentioned.

XVI.

The Court erred in making and filing the following portion of finding No. XI, as follows:

The defendant at said time offered "to make another test thereof."

It appears from the evidence that the defendant did not, at said time, to wit, March 30th, 1910, offer to make another test of said apparatus, but, on the contrary, the [775] evidence shows that the defendant's offer to operate said apparatus was made contingent upon the defendant being given the opportunity and time to make certain and extensive repairs to defects which had resulted in the final test of said apparatus, and that at said time, the defendant was neither able to, willing or desirous to continue the operation or make another test of said apparatus until some future time, at which time said extensive repairs on said apparatus would have been made.

The evidence is insufficient to support the finding in the respects mentioned.

XVII.

The Court erred in making and filing the following portion of finding No. XII, as follows:

"It is not true that said apparatus is or was of no value to plaintiff by reason of its failure to have produced on an average of not less than 2,000,000 cubic feet of gas for each day of the said period; nor because of its failure during said period to consume 35 pounds or less of lamp-black fuel per thousand cubic feet of gas made or for any other cause."

It appears from the evidence that the said apparatus of the defendant is and was of no value to the plaintiff by reason of its failure to produce on an average of not less than 2,000,000 cubic feet of gas

per day of 24 hours, and because of its failure to produce gas with a consumption of not more than 35 pounds of lamp-black per thousand cubic feet of gas made, and by reason of its failure to produce gas [776] having a candle-power of not less than 20 candles.

The evidence shows that the cost of labor to operate the defendant's water-gas apparatus is constant, regardless of the amount of gas produced by said apparatus, and that the smaller the generating capacity of said apparatus the more it would cost the plaintiff for labor to generate each thousand cubic feet of gas produced by it.

The evidence further shows that lamp-black fuel, such as was furnished to the defendant by the plaintiff, has a ready sale in the market of the city of Los Angeles at \$9 to \$10 per ton, and that the failure of such apparatus to produce gas with a consumption of not exceeding 35 pounds of lamp-black per thousand cubic feet of gas made, would have resulted in said apparatus consuming, based upon its rate of consumption of lamp-black fuel during said test from March 10th to March 30th, 1910, of about \$10,000 worth of lamp-black more per year than the said apparatus would have consumed had it developed a capacity to produce gas, using not more than 35 pounds of lamp-black fuel for each one thousand cubic feet of gas produced.

And the evidence further shows that the failure of said apparatus to produce gas having a candle-power not less than 20 candles would necessitate the plaintiff increasing the candle-power of the oil-gas pro-

duced by its other sets, which could only be done at a considerable cost to the plaintiff, for this must be done through a process of mixing the two gases and thereby raising the candle-power of the gas produced in the defendant's apparatus to a marketable candle-power.

The evidence is insufficient to support the finding in the respects mentioned. [777]

XVIII.

The Court erred in making and filing the following portion of finding No. XII, as follows:

"The Court finds that it is not true that the failure on the part of said apparatus during said period to produce the average quantity of gas above referred to, with the fuel consumption per thousand cubic feet above specified was without any fault on the part of the plaintiff."

It appears from the evidence that the failure on the part of said apparatus of the defendant, during said period from March 10th to March 30th, 1910, to produce the average quantity of gas referred to in the contract of July 12th, 1909, with a fuel consumption per thousand cubic feet of gas made, specified therein, was without any fault on the part of the plaintiff.

It appears from the evidence, and was admitted by the defendant, that in all respects, except as to an alleged failure on the part of the plaintiff, to supply the defendant during the operation of said apparatus from March 10th to March 30th, 1910, with lamp-black fuel of greater stability and tensile strength than that possessed by the lamp-black fuel actually

furnished to the defendant, the plaintiff at all times and in every respect fully performed each and every condition and obligation on its part to be performed under the said contract of July 12th, 1909. [778]

The evidence shows, as is hereinafter in this Assignment of Errors more particularly and fully alluded to, that the lamp-black fuel furnished by the plaintiff during said final test of said apparatus, was at all times lamp-black fuel such as was specified and provided for in the said contract of July 12th, 1909; that the tensile strength and stability of the lamp-black fuel furnished to the defendant during said final test of said apparatus was superior to and greater than that of any lamp-black fuel ever furnished or supplied to the defendant for the operation of its said apparatus since the 8th day of April, 1907; that said lamp-black fuel, so supplied to the defendant during said test, was lamp-black fuel of the exact quality and character that the defendant and the Los Angeles Gas and Electric Company had in mind and contemplated using at the time said contract of July 12th, 1909, was entered into.

The evidence is insufficient to support the finding in the respects mentioned. [779]

XIX.

The Court erred in making and filing the following portion of finding No. XII, as follows:

"That there never was a test of said apparatus under the conditions prescribed by the said contract."

It appears from the evidence that the test and operation of the said apparatus of the defendant,

from March 10th to March 30th, 1910, inclusive, was a final test of said apparatus under the conditions prescribed by the contract of July 12th, 1909, that on the 9th day of March, 1910, the defendant notified the plaintiff, in writing, that at 6 o'clock A. M. on March 10th, 1910, it would commence the final twenty-day test of said apparatus, as provided for in said contract, and that in pursuance of said notification, the defendant did, on March 10th, 1910, commence the final test of said apparatus and did prosecute the same thereafter for twenty consecutive days until March 30th, 1910, at 6 o'clock A. M., at which time the defendant did, of his own accord, cease to operate the said apparatus, and that during said test, the plaintiff at all times furnished and supplied to the defendant, fuel and other operative conditions in full compliance with the obligations on its part to be performed under and by virtue of the contract of July 12th, 1909, and in all other respects complied with the said contract.

The evidence is insufficient to support the finding in the respects mentioned. [780]

XX.

The Court erred in making and filing the following portion of finding No. XII as follows:

"The failure to test said apparatus, as provided in said contract, was due to the fault of the plaintiff."

The evidence shows that there was no failure to test said apparatus, as provided in said contract of July 12th, 1909, through or due to any fault of the plaintiff. On the contrary, the evidence shows that

from March 10th to March 30th, 1910, a final test was had of said apparatus, such as was provided for under the contract of July 12th, 1909, and that during said final test of said apparatus, the plaintiff furnished and supplied to the defendant, at all times during said test, fuel and operative conditions such as were required of it under the said contract of July 12th, 1909, and in all other respects, performed all the conditions and obligations upon its part to be performed under said contract.

The evidence further shows that prior to the commencement of the operation of said apparatus, on the 10th day of March, 1910, the defendant notified the plaintiff, in writing, that it would commence the final test of the said apparatus on March 10th, 1910; that at said time the defendant did commence the final test of said apparatus and concluded the same on the 30th day of March, 1910. The evidence shows that prior to the commencement of said final test on March 10th, 1910, the defendant informed the plaintiff that all of the conditions furnished by the plaintiff for said test were perfectly satisfactory to the defendant, and notified the plaintiff that all of the fuel which plaintiff had on hand for the purpose of supplying the defendant during said test was [781] satisfactory to the defendant, and such fuel as was called for under the contract of July 12th, 1909.

The evidence is insufficient to support said finding in the respects mentioned.

XXI.

The Court erred in making and filing the follow-

ing portion of finding No. XIII as follows:

"It is not true that said apparatus was in a dilapidated condition" (at the time it ceased operating on March 30th, 1910).

It appears from the evidence that on the 30th day of March, 1910, the said apparatus of the defendant was in a dilapidated condition; that the charging floor of said apparatus was loose, and was in places raised and bulged out due to the expansion of the top of the generator; that the top of the generator was in a leaky condition, due to insufficient reinforced support, which would necessitate removing the entire top of the generator and installing large I-beams as supports thereof; that one of the most important valves connecting the generator with the carbureter was installed in a temporary and unsatisfactory manner; that a large quantity of the brick work in the superheater had melted and fallen down, and that all of the remaining brick work in the superheater and carbureter was so covered and clogged with carbon that before the apparatus could be further operated it would be necessary to remove all of the bricks in said superheater and carbureter, to reline the same and correct all of the defects as above set forth; that such changes would necessitate the expenditure of a large sum of money, and would consume considerable time.

The evidence is insufficient to support the finding in the respects mentioned. [782]

XXII.

The Court erred in making and filing the following portion of finding No. XIII as follows:

"All of said defects could readily have been corrected" (referring to defects existing in said apparatus on March 30th, 1910).

It appears from the evidence that the defects existing in said apparatus on March 30th, 1910, could only be remedied by the expenditure of a large amount of money and several weeks of labor.

The evidence is insufficient to support the finding in the respect mentioned.

XXIII.

The Court erred in making and filing that portion of finding XIII, as follows:

That the said defects were "conditions not infrequently resulting from the operation of such apparatus in the natural and ordinary course of operation."

It appears from the evidence that in January and February of 1910, the defendant expended about \$8,000 in putting its said apparatus in perfect working order, and that at said time all of the brick work in said apparatus was in a perfect and clean condition; that from the 14th to the 16th of March, 1910, the defendant ceased making gas in its said apparatus, and did expend said time in cleaning [783] out the brick work in its said apparatus; and that on the 30th day of March, 1910, the brick work in said apparatus was so choked and burned that the apparatus could not be further operated without taking out all of the brick work in said apparatus and relining the same and reinforcing the top of the generator and making many other repairs; that in all the gas-generating sets operated by the plaintiff at its plant it was only customary to shut down said plants once

a year for the purpose of recheckering or relining the same with new brick, and it is not a natural or usual thing, but, on the contrary, it is a most unusual requirement for an apparatus to require relining and recheckering with bricks within a period of three or four months.

Furthermore there was no evidence of any apparatus ever operated by the plaintiff or the defendant requiring the reinforcement of the top of the generator, as a result of its operation, nor any evidence that temporary or imperfect valves is a condition resulting in the natural and ordinary operation of such water-gas apparatus.

The evidence is insufficient to support the finding in the respects mentioned.

XXIV.

The Court erred in making and filing the following portion of finding No. XIII as follows:

“The defendant did offer to correct all of said imperfections” (existing in said apparatus on March 30, 1910).

It appears from the evidence that the offer of the defendant to correct the imperfections existing in its said [784] apparatus on March 30th, 1910, was made contingent upon the acceptance of said apparatus by the plaintiff or the agreement upon the part of the plaintiff to grant it another and additional test of said apparatus.

The evidence is insufficient to support the said finding in the respect mentioned.

XXV.

The Court erred in making and filing the following

portion of finding No. XIII as follows:

The defendant did offer "to restore the said apparatus so that the same would be in first class order if the said plaintiff would permit the said work to be done and would accept said apparatus or permit a test of the same under the terms and provisions of the contract, or would permit an operation or test of the same under the conditions provided in the contract for any reasonable period that might be desired by plaintiff."

It appears from the evidence that the only offer made by the defendant to repair the dilapidated and imperfect condition of said apparatus after the 30th of March, 1910, was an offer to repair the same either upon the agreement upon the part of the plaintiff to accept said apparatus and pay therefor the purchase price, or an agreement upon the part of the plaintiff to grant another and additional test of said apparatus.

The evidence is insufficient to support the finding in the respect mentioned. [785]

XXVI.

The Court erred in making and filing the following portion of finding No. XIII as follows:

"Plaintiff did not fully or completely perform each and all the conditions upon its part under said contracts to be performed."

It appears from the evidence that the plaintiff did, at all times, fully and completely perform all of the conditions upon its part to be performed under said contract. The evidence shows that, except with respect to the claim of the defendant, urged during the

trial, that the lamp-black fuel furnished by the plaintiff during the final test of said apparatus did not possess the tensile strength and stability required of it under the contract of July 12th, 1909, the defendant admitted that the plaintiff had at all times fully and completely performed all the conditions on its part to be performed under said contract of July 12th, 1909. And the evidence further shows that all of the lamp-black fuel which was furnished by the plaintiff during the final test of said apparatus was lamp-black fuel of the kind and character called for and provided in said contract of July 12th, 1909.

The evidence is insufficient to support the finding in the respects mentioned. [786]

XXVII.

The Court erred in making and filing the following portion of finding No. XIII as follows:

That the plaintiff "failed to perform its obligations under said contracts in the particulars herein set forth."

The findings show that the particulars to which the above portion of the finding refers was the alleged failure on the part of the plaintiff to furnish defendant with lamp-black fuel, possessing tensile strength and stability such as the defendant claims was required under the contract of July 12th, 1909. But, it appears from the evidence, that the lamp-black fuel furnished and supplied by the plaintiff to the defendant was, at all times, lamp-black fuel of the kind and character contracted for under said contract of July 12th, 1909; and that, as to the lamp-black fuel furnished to the defendant by the plain-

tiff during the final test of said apparatus from March 10th to March 30th, 1909, the defendant had examined the said fuel prior to the commencement of said test, and informed plaintiff, in writing, that the same was satisfactory to the defendant.

The evidence is insufficient to support the finding in the respects mentioned. [787]

XXVIII.

The Court erred in making and filing the following portion of finding No. XIV as follows:

“The allegations of the 22d paragraph of the complaint are not true.”

The allegations of the 22d paragraph of the complaint are as follows:

“That, by reason of the failure and refusal of defendant to return to plaintiff said sum of Twenty-six Thousand Eight Hundred Twenty-three and 45/100 Dollars (\$26,823.45), and to remove said apparatus from plaintiff’s premises, as aforesaid, plaintiff has been damaged in the sum of Twenty-eight Thousand Three Hundred Twenty-three and 45/100 Dollars (\$28,323.45).”

It appears from the evidence that the plaintiff is and was damaged to the extent of \$28,323.45 by reason of the failure and refusal of the defendant to return to the plaintiff the sum of \$26,823.45, and to remove the said apparatus of the defendant from the plaintiff’s premises.

The evidence shows that under and by virtue of the contract of July 12th, 1909, the defendant agreed to return to plaintiff said sum of \$26,823.45, if, during the final twenty-day test of said apparatus, as under

said contract provided, it failed to bring its said apparatus to an average gas-making capacity, during said final test, of at least two million cubic feet per day, using not more than 35 pounds of lamp-black fuel containing not more than 10 per cent of moisture per thousand cubic feet of gas made, and to produce a good, commercial gas of not less than 20 candle-power.

It appears from the evidence that from the 10th to the 30th of March, 1910, the defendant had made such twenty-day final test of said apparatus, as in said contract provided, and that during said test of said apparatus, without any fault, [788] on the part of the plaintiff, the said apparatus failed to produce an average of at least two million cubic feet of gas per day of 24 hours; that, during said test, said apparatus did consume more than 39 pounds of carbon, containing less than 10 per cent of moisture, for each one thousand cubic feet of gas made; and that said apparatus, did not, during said test produce gas of an average candle-power of twenty candles.

The evidence further shows that the plaintiff, immediately after the 30th day of March, 1910, demanded of the defendant that it immediately return to the plaintiff the sum of \$26,323.45; and requested that the defendant remove from the plaintiff's premises its said apparatus; that the defendant has at all times refused to remove its said apparatus, and that the reasonable cost of removing the same is \$2,000; that by reason of the failure of the defendant to pay the plaintiff the said sum of \$26,323.45, and to remove its said apparatus from the premises of the plaintiff,

the plaintiff has been damaged in the sum of \$28,-323.45.

The evidence is insufficient to support the finding in the respects mentioned. [789]

XXIX.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"The defendant did perform the obligations undertaken by it in said contract."

It appears from the evidence that the defendant did not perform the obligations undertaken by it under its contract of April 8th, 1907, or under its contract of July 12th, 1909. On the contrary, it appears from the evidence that prior to July 12th, 1909, the defendant had, at all times, failed to bring its said apparatus to a gas-making capacity of at least 2,000,000 cubic feet of gas per day of 24 hours; or to bring its apparatus to a capacity of producing one thousand cubic feet of gas, using not more than 35 pounds of lamp-black fuel, containing not more than 10 per cent of moisture; or to produce with its said apparatus, a gas having a candle-power of not less than twenty candles; and that said failure on the part of the defendant was without any fault on the part of the Los Angeles Gas and Electric Company.

It further appears from the evidence that from the 10th day of March to the 30th of March, 1910, inclusive, the defendant did make a final test of its said water-gas apparatus, as contemplated and provided for under the contract of July 12th, 1909, and that during said test the defendant, without any fault on the part of the plaintiff, failed to bring its said ap-

paratus to an established gas-making capacity, as in said contract provided, of at least 2,000,000 cubic feet of gas per day of 24 hours; and failed to produce one thousand cubic feet of gas, using not more than 35 pounds of lamp-black fuel, containing not more than ten per cent of moisture; [790] and to produce a good, commercial gas of not less than twenty candle-power.

The evidence shows that during said final test of said apparatus, the said apparatus did not produce more than 1,800,000 cubic feet of gas per 24 hours, and did not produce gas with a consumption of less than 39 pounds of lamp-black fuel per thousand cubic feet of gas, or produce a good, commercial gas of a candle-power greater than 19 candles; that at the termination of said test, the said apparatus of the defendant was in a dilapidated and defective condition, and not in such a condition as would have enabled it to be further operated without an expenditure of considerable money and time for the purpose of repairing its many defects.

The evidence is insufficient to support the finding in the respects mentioned. [791]

XXX.

The Court erred in making and filing the following portion of finding No. XVI, as follows:

“Plaintiff did not perform the obligations undertaken by it in said contracts in this: that it did not, during said test, furnish lamp-black fuel of the quality called for by said contract.”

It appears from the evidence that the lamp-black fuel furnished and supplied by the plaintiff to the

defendant during the final test of said apparatus from March 10th to March 30th, 1910, and at all other times, was lamp-black fuel of the quality, kind and character called for in said contract of July 12th, 1909; that the plaintiff did not fail to perform the obligations undertaken by it under said contract of July 12th, 1909, by reason of the quality of lamp-black fuel furnished and supplied by it to the defendant during the said final twenty-day test of said apparatus. The evidence shows that neither the Los Angeles Gas and Electric Company or the plaintiff, in their contracts of April 8th, 1907, and July 12th, 1909, or at any other time, agreed to furnish and supply to the defendant lamp-black fuel of a chemical or physical quality or character different from that possessed by the lamp-black fuel furnished to the defendant during the said final twenty-day test of said apparatus; that between April 9th, 1908, and July 12th, 1909, the Los Angeles Gas and Electric Company had furnished to and the defendant company had used in its water-gas apparatus, thousands of tons of bricked lamp-black fuel of the same chemical composition and physical characteristics as possessed [792] by the lamp-black fuel furnished by the plaintiff and the defendant during the said final twenty-day test of said apparatus in March, 1910, and that at no time prior to July 12th, 1909, or at no time thereafter had the defendant been supplied with lamp-black fuel having a greater tensile strength or stability, or of superior chemical or physical composition than that possessed by the lamp-black fuel furnished to the defendant during the said final

twenty-day test of said apparatus.

The evidence further shows that at the time of entering into said contract of July 12th, 1909, the Los Angeles Gas and Electric Company was, with the knowledge of the defendant, the only concern in the United States producing lamp-black fuel in the form of brick, and that at said time and at all times thereafter, the Los Angeles Gas and Electric Company and the plaintiff used in the manufacture of said bricks the best machinery procurable for such purpose, and did manufacture bricks with as great a tensile strength and stability as was possible to manufacture the same; that the defendant was at said time familiar with the character of the lamp-black bricks which the Los Angeles Gas and Electric Company had in the past furnished to it and which it was possible for the said company and plaintiff to furnish to it in the future; that at the time of entering into said contract of July 12th, 1909, the Los Angeles Gas and Electric Company did not inform the defendant, or represent to it, or did the defendant request of the Los Angeles Gas and Electric Company that the fuel which would be furnished to it under said contract of July 12th, 1909, should be of a chemical constituency, or possess a greater tensile strength or solidity than that possessed by the lamp-black bricks theretofore furnished to the defendant, or different form, or greater [793] than that actually possessed by the lamp-black fuel which was supplied to the defendant during the final test of said apparatus from the 10th to the 30th of March, 1910.

The evidence further shows that in December, 1909, the plaintiff had accumulated a supply of about 3,000 tons of bricked lamp-black fuel, which it proposed to furnish to the defendant during the final test of the said apparatus, and so informed defendant; that the defendant did thereupon examine said fuel, and notified plaintiff orally and in writing that the same was satisfactory to the defendant for its use during the proposed final twenty-day test of said apparatus; that plaintiff did thereafter use every effort and protection to keep said fuel in the best possible condition *possible*, and the defendant was, at all times prior to the 10th day of March, 1910, aware of the methods taken by the plaintiff in caring for and protecting the said fuel, and that the defendant, at no time prior to the 20th day of March, 1910, at which time it was in the midst of said twenty-day test, informed the plaintiff or claimed that the lamp-black fuel furnished by the plaintiff did not have the tensile strength and stability required of the lamp-black fuel under the contract of July 12th, 1909.

The evidence shows that all of the lamp-black fuel furnished and supplied by the plaintiff to the defendant, during the said twenty-day final test of said apparatus was lamp-black fuel of the character provided in said contract of July 12th, 1909, and was lamp-black fuel of the best chemical composition and possessing the greatest tensile strength and solidity that it was possible for the plaintiff, or any other person in the world at said time to produce commercially; [794] that it was at said time impossible for the plaintiff or any other person to have sup-

plied the defendant with superior lamp-black brick fuel.

The evidence further shows that all of the lamp-black fuel furnished and supplied to the defendant by the plaintiff during said final twenty-day test of said apparatus was equal to and better than any lamp-black fuel ever theretofore furnished or supplied to the defendant by the Los Angeles Gas and Electric Company or the plaintiff.

The evidence is insufficient to support the finding in the respects mentioned. [795]

XXXI.

The Court erred in making and filing the following portion of finding No. XVI, as follows:

"The lamp-black fuel furnished defendant during said test contained from 10 to 15 per cent of impurities in the form of tar or other hydrocarbons and a small percentage of noncombustible ash."

It appears from the evidence that the tar, hydrocarbons and noncombustible ash, occurring in the lamp-black fuel furnished by the plaintiff to the defendant, did not constitute impurities in said lamp-black fuel; but, on the contrary, the evidence shows that lamp-black produced in the manufacture of gas by petroleum oil necessarily possesses a certain percentage of tar, hydrocarbons and noncombustible ash, and that in the trade and art of gas manufacture, such elements are considered as ever-present constituents of lamp-black as known in the trade of gas manufacture.

The evidence further shows that the lamp-black briquets furnished to the defendant, and analyzed

prior to April 8th, 1907, contained the same constituents as did the lamp-black fuel furnished to the defendant for its final test in March, 1910; that the defendant, prior to April 8th, 1907, and at all times thereafter, had knowledge of the exact chemical constituency of said lamp-black, and used such term in said contract of April 8th, 1907, and July 12th, 1909, with full knowledge and understanding that the lamp-black provided for in said contract was not and would not be chemically pure carbon.

The evidence is insufficient to support the finding in the respects mentioned. [796]

XXXII.

The Court erred in making and filing the following portion of finding No. XVI, substantially and in effect as follows:

The lamp-black furnished by the plaintiff to the defendant during said final test was not fuel of the kind and character specifically provided for in the contract of July 12th, 1909.

It appears from the evidence that the lamp-black fuel furnished by the plaintiff to the defendant during said final test of said apparatus from March 10th to March 30th, 1910, was fuel of the kind and character specifically provided for in the contract of July 12th, 1909.

It further appears from the evidence that the defendant had, at no time prior to July 12th, 1909, seen or examined any lamp-black produced as a by-product of oil-gas manufacture, made in the form of an ordinary building brick, except such lamp-black as was bricked at the plant of the Los Angeles Gas and Elec-

tric Company, and that the said Los Angeles Gas and Electric Company was at said time, and at all times [797] thereafter, the only concern in the United States which produced and manufactured lamp-black bricks of the size and form of the lamp-black bricks supplied to the defendant in the operation of its water-gas set; that the Los Angeles Gas and Electric Company and the plaintiff at all times used in the manufacture of its lamp-black bricks the best and most efficient machinery known or procurable for such purposes, and there was no evidence that at any place in the United States lamp-black bricks were manufactured or produced, commercially, of a physical or chemical quality or character equal to or different from or better than those produced by the Los Angeles Gas and Electric Company and the plaintiff, and supplied to the defendant at all times for the operation of its said apparatus, and that between the 8th day of April, 1907, and the 12th day of July, 1909, the Los Angeles Gas and Electric Company had supplied to the defendant and the defendant had used in the operation of its water-gas set thousands of tons of lamp-black bricks, having a tensile strength and solidity less than the sample briquette furnished to the defendant prior to April 8th, 1907, and having a tensile strength not greater than the lamp-black bricks furnished to the defendant by the plaintiff between the period of March 10th to March 30th, 1910; and that at the time defendant entered into said contract of July 12th, 1909, it did not request of the Los Angeles Gas and Electric Company, nor even suggest, that the brick lamp-black fuel which

should be supplied to it under said contract should have a tensile strength or solidity equal to the sample briquet furnished to it prior to April 8th, 1907, or a tensile strength or solidity greater than or different from the lamp-black bricks used by the defendant between the said April 8th, 1907, and the 12th day of July, 1909. [798]

And the evidence further shows that the Los Angeles Gas and Electric Company did not at any time prior to the said 12th day of July, 1909, or on said date, or at any time thereafter represent to the defendant that the lamp-black fuel which would be supplied to it under said contract of July 12th, 1909, would have a tensile strength equal to the briquets furnished to the defendant prior to April 8th, 1907, or different from or greater than the tensile strength and solidity of the lamp-black bricks furnished and supplied to the defendant between the 8th day of April, 1907, and the 12th day of July, 1909, or a tensile strength or solidity greater than that actually possessed by the lamp-black bricks which were later supplied by the plaintiff to the defendant during the period from March 10th to March 30th, 1910, and that after said 12th day of July, 1909, and at various times up to the 10th day of March, 1910, the plaintiff furnished and supplied to the defendant thousands of tons of lamp-black brick fuel possessing a tensile strength and solidity not greater than that possessed by the lamp-black bricks theretofore furnished to the defendant and thereafter furnished to the defendant during the final test of said apparatus, and the defendant at no time prior to the 20th day of

March, 1910, claimed, suggested or even intimated that the lamp-black fuel furnished and supplied by the plaintiff or its assignor at any time prior thereto possessed a tensile strength or solidity, or physical quality different from that which the plaintiff or its assignor had, either in the contract of April 8th, 1907, or the contract of July 12th, 1909, agreed to furnish or supply to the defendant, but, on the contrary, the defendant had during the months following November, 1909, up to the first day of March, 1910, witnessed the production and storage by the plaintiff in its yards of 3,000 tons of [799] lamp-black bricks which the plaintiff stated to the defendant that it intended to furnish and supply to the defendant during the final test of its said apparatus, and which the defendant expected the plaintiff would furnish and supply to it at said time, and that it had the opportunity to, and did at various times examine such fuel and test the same, and did, in the latter part of December, 1909, inform the plaintiff in writing that said 3,000 tons of lamp-black brick fuel was satisfactory and would be suitable to the defendant as fuel for use during the final test of its said apparatus, under the contract of July 12th, 1909.

The evidence further shows that all of the fuel furnished by the plaintiff to the defendant was taken from said pile of 3,000 tons of lamp-black bricks which had theretofore been supplied to the defendant, and were all the lamp-black bricks furnished by the plaintiff to the defendant during the final test of said apparatus, and were lamp-black bricks of the best quality, both physically and chemically, that it was

possible for the plaintiff or any other person at said time to manufacture or produce.

The evidence is insufficient to support the finding in the respects mentioned.

XXXIII.

The Court erred in making and filing the following portion of finding No. XVI as follows:

The lamp-black bricks furnished by the plaintiff to the defendant during said final test had been treated in such a manner as to "leave voids therein."

[800]

It appears from the evidence that in the manufacture of lamp-black bricks small air-chambers necessarily are formed in said bricks; that it is impossible to manufacture the same without the presence of said air spaces occurring at times in the said bricks.

The evidence is insufficient to support the finding in the respect mentioned.

XXXIV.

The Court erred in making and filing the following portion of finding No. XVI as follows:

The said lamp-black bricks "had been insufficiently compressed."

There is no evidence that the lamp-black bricks furnished by the plaintiff to the defendant from March 10th to March 30th, 1910, were insufficiently compressed; but, on the contrary, it appears from the evidence that all of the said bricks were compressed to as high a degree as possible; that the plaintiff is the only person in the United States engaged in the manufacture of lamp-black bricks and that in

the production of the same the plaintiff used at all times the best possible machinery and methods; and no evidence was introduced during the trial of the production by anyone, or of the possibility of production, commercially, of lamp-black bricks compressed in any manner superior to the bricks produced by the plaintiff at said time and furnished to the defendant; that all of the lamp-black fuel furnished by the plaintiff to the defendant, during said final test, was compressed to a degree and in a manner not inferior to any lamp-black bricks ever theretofore furnished to the defendant by the plaintiff.

The evidence is insufficient to support the finding in the respect mentioned. [801]

XXXV.

The Court erred in making and filing the following portion of finding No. XVI as follows:

That said fuel furnished by the plaintiff to the defendant during said final test was "so unstable that they were not able to withstand, and did not withstand the jarring necessarily incident to handling the same for fuel purposes in such apparatus."

It appears from the evidence that all of the lamp-black fuel furnished by the plaintiff to the defendant was sufficiently stable to withstand the jarring necessarily incident to handling the same for fuel purposes in the defendant's apparatus. The evidence shows that practically every brick delivered by the plaintiff to the defendant during said test was delivered at the base of the fuel chute of the defendant's apparatus in the perfect form of a brick, and that thereafter the handling of said fuel was con-

ducted in such a manner as best suited the defendant, and entirely by its employees; that in handling said fuel, defendant carried the same to a great height in buckets, from whence it was dumped down into a bin in large quantities and from thence again dropped a great distance into the generator, which said handling necessarily resulted in the breaking up of a certain portion of the bricks; that the matter of handling said fuel was one lying solely in the power of the defendant, and that the defendant could have supplied the generator with fuel by the use of wheelbarrows and other devices which would practically have prevented any of the said bricks from breaking; that it is not unusual for lamp-black bricks to become broken in handling the same for fuel purposes in gas generators.

The evidence is insufficient to support the finding in the respect mentioned. [802]

XXXVI.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"Notwithstanding the protest of the defendant during said test, plaintiff did furnish to the defendant bricks which had been and were being throughout the entire test subjected to external, artificial heat, or kiln-drying, for the purpose of driving out moisture therefrom."

It appears from the evidence that it is impossible to manufacture a lamp-black brick from crude lamp-black containing less than 15 to 20 per cent of moisture; that therefore, to the knowledge of the defendant, the plaintiff and its assignor at all times pro-

duced lamp-black bricks containing from 15 to 20 per cent of moisture when first made, and that all of said bricks were thereafter reduced in moisture content, either by drying the same in the sun or by means of artificial heat. The evidence shows that as early as December, 1909, the plaintiff had, in order to be able to furnish defendant with the best possible character of fuel for the final test of its apparatus, accumulated about 3,000 tons of lamp-black bricks, which it proposed to furnish to the defendant during the final test of said apparatus; and the plaintiff had, by means of exposing said bricks to the sun for several months succeeded in reducing all of said bricks to a moisture content of less than 10 per cent; that during said month of December, 1909, the plaintiff did inform the defendant of the purpose for which it intended to use said 3,000 tons of brick, and the defendant did thereupon examine said bricks, and stated to the plaintiff in writing that the same were satisfactory to it for use in said final test. The evidence shows that the plaintiff thereupon, at the suggestion of the defendant, covered said pile [803] of bricks with sheet iron and other substances to protect the same from the rains which occurred in the spring; that during January, February and March, 1910, there was a large and excessive rainfall in the city of Los Angeles, and that considerable portion of said 3,000 tons of brick, by reason of their physical character, and without any fault on the part of the plaintiff absorbed considerable moisture from the atmosphere so that by the latter part of February a large portion of said bricks were of a moisture content greater than

10 per cent; that, thereupon, plaintiff did at great expense, to the knowledge of the defendant and without any protest from said defendant, proceed to drive the excessive moisture from said bricks in the only possible manner, to wit, by repiling said bricks in the form of kilns and driving the moisture therefrom by means of artificial heat. The evidence shows that by employing said means the plaintiff did reduce the moisture content of all the said bricks furnished to the defendant during its said final test to a degree less than 10 per cent, and that by the 10th day of March, 1910, all of said bricks furnished to the defendant during said final test had been dried to a proper degree of moisture; that thereafter, plaintiff ceased to apply said artificial heat to the said bricks.

The evidence further shows that the defendant at no time made any objection to the manner in which the plaintiff had dried the said bricks, or to the character of said bricks after drying, until about the 20th day of March, 1910, at which time it was impossible for the plaintiff to furnish or supply defendant with bricks any different from those which it was supplying to it; that bricks dried by means of artificial heat, or kiln-dried, possess a tensile strength as great, if not greater than those bricks dried by means of the sun, and are in all other respects identical with lamp-black bricks dried by [804] means of natural sunlight.

The evidence is insufficient to support the finding of the Court in the respects mentioned.

XXXVII.

The Court erred in making and filing the following

portion of finding No. XVI as follows:

The plaintiff did furnish the defendant during said test bricks which were "unstable and easily disintegrated."

It appears from the evidence that all of the bricks furnished to the defendant by the plaintiff, during the final test, were as above set forth more particularly in our Assignment of Errors the most suitable bricks which were possible for the plaintiff or any other person to produce, commercially, and that the said bricks were of such stability as to withstand all the necessary handling of the same incident to the preparation and drying of said bricks, and the hauling of the same to its generator, and that any breakage that thereafter occurred in said bricks was due to the handling of the same by the defendant's agents; and that in the handling of the same by the defendant, said bricks were submitted to unusual and violent usage and handling, which caused a small portion of the same to become broken and disintegrated.

The evidence is insufficient to support the finding in the respects mentioned. [805]

XXXVIII.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"Practically all of the bricks furnished to the defendant during said test were of such an unsubstantial character that great quantities of them were necessarily broken up and crumbled in the handling of them."

It appears from the evidence, as specified in the

last Assignment of Error, that the lamp-black bricks were not of an unsubstantial character and were not necessarily broken up or crumbled in the handling of them; and it further appears from the evidence that only a small portion of the bricks supplied to the defendant did crumble up during the handling of the same by the defendant.

The evidence is insufficient to support the finding in the respect mentioned. [806]

XXXIX.

The Court erred in making and filing that portion of finding No. XVI as follows:

“This crumbling and powdering took place to such an extent as that great quantities of fine pulverized and crumbled material unavoidably found its way into the generator, with the result that the fuel bed was packed and its efficiency largely impaired, and with the further result that excessive and extraordinarily large quantities of dust were blown over from the generator into the carbureter, and tended to form a deposit upon the brick work in the carbureter, and to materially retard its function and impair its capacity.”

It appears from the evidence that the reason why large quantities of fine carbon passed from the generator into the superheater was because the defendant’s agent at the last moment before commencing the final test of said apparatus, contrary to the plan of operation outlined and contemplated by the defendant company’s president and engineers, doubled the amount of air blast injected into the generator of said apparatus, and that said excessive air blast was

the reason why the large quantities of fine carbon were carried from the generator into the carbureter, and further, that the defendant [807] under its contract of July 12th, 1909, specifically agreed to increase the capacity of said apparatus by catching and handling such fine dust as was apt to pass from the generator to the carbureter. The evidence shows that the defendant, subsequent to July 12th, 1909, doubled the size of the generator that it had theretofore used, and that the engineers of the defendant company, in considering whether they had provided sufficient capacity for handling said fine dust, which is necessarily expected to pass from the generator into the carbureter, only contemplated upon the operator of said apparatus using one-half of the amount of blast which said operator actually subjected said generator to during said final test of said apparatus, and that it was by reason of the aforesaid acts of the defendant and not otherwise that such large quantities of dust were carried from the generator into the carbureter and resulted in the impairment of the operating capacity of said machine.

The evidence is insufficient to support the finding in the respects mentioned. [808]

XL.

The Court erred in making and filing the following portion of finding No. XVI as follows:

“Throughout said test plaintiff continued to supply bricks of the character above described, to wit, so entirely lacking in firmness and stability as that practically all of them broke more or less in handling.”

It appears from the evidence that only a small percentage of the lamp-black bricks actually placed by the defendant in its generator were broken, and that practically every brick delivered by the plaintiff to the defendant at the base of its fuel chute was in a perfect brick form.

It appears further from the evidence that all the lamp-black brick furnished by the plaintiff to the defendant were lamp-black bricks possessing as great a degree of firmness and stability as possible for them to possess, and that all of said bricks did possess such a degree of firmness and stability as was required under the contract of July 12th, 1909.

The evidence is insufficient to support the finding in the respects mentioned. [809]

XLI.

The Court erred in making and filing the following portion of finding No. XVI as follows:

“Great quantities” (of the bricks furnished by the plaintiff) “crumbled and pulverized to such an extent that at times more than one-third and almost constantly as much as 15% or 20% was screened out as waste.”

It appears from the evidence that the term “waste” used in the above finding refers to the fine carbon dust which the defendant abstracted from the lamp-black fuel by means of large slits and holes which it placed in its fuel chute leading to the generator; that the percentage of fine carbon which the defendant thus removed was material which would have made good fuel if used in said generator; and that the existence of said fine carbon was due almost entirely

to the rough and violent manner in which the defendant handled said lamp-black fuel after it was delivered to it by the plaintiff. The evidence shows that the amount of fine carbon which the plaintiff obtained in using the lamp-black fuel furnished to it by the plaintiff during the final test of said apparatus was not greater than that encountered by the defendant at all times prior thereto in the operation of said apparatus.

The evidence is insufficient to support the finding in the respects mentioned. [810]

XLII.

The Court erred in making and filing the following portion of finding No. XVI as follows:

“At least as much more” (of the waste) “unavoidably went into the generator with the serious detrimental effects above described.”

It appears from the evidence that only a very small percentage of said fine carbon went into the generator, and that the effect of the presence of said fine dust in the generator would not have been detrimental to the said apparatus had it not been for the fact that the defendant’s representative and operator used during the final test of said apparatus an air blast double in force to that which the defendant company had contemplated and designed that said apparatus should use and accommodate, and that by means of said excessive air blast a large portion of the fine carbon in the generator was blown from the generator into the carbureter before it could be consumed by the fire in the generator; and that such a condition was without any fault on the part of the plaintiff.

The evidence is insufficient to support the finding in the respect mentioned. [811]

XLIII.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"In the operation of all gas apparatus it is customary and necessary" to shut down said apparatus at some regular interval for the purpose of burning out and cleaning out the apparatus.

It appears from the evidence that the contract of July 12th, 1909, between the defendant and the plaintiff's assignor did not contain any provision allowing the defendant to shut down its said apparatus for the purpose of burning out and cleaning out the same during the final test of said apparatus; but said contract, on the contrary, provided that during the final test of said apparatus, said machine should be operated for 20 consecutive days. It further appears from the evidence that while it is customary at the plaintiff's plant to cease making gas every 7 days in order to burn out and clean out the generator, that such practice is followed with such generators as are kept in steady operation throughout the entire year; that it is not customary, and should not have been necessary in the operation of a gas generator for a twenty-day test, such as was provided for in the contract of July 12th, 1909, to shut down said apparatus at any time during the twenty-day test for the purpose of burning out and cleaning out the same; and that said contract of July 12th, 1909, was entered into without any agreement, understanding or expectation that the said apparatus of the defendant

should be shut down at any time during said final test for such purpose.

The evidence does not support the finding in the respect mentioned. [812]

XLIV.

The Court erred in making and filing the following portion of finding, No. XVI as follows:

"A burning and cleaning out period of one day out of seven is a proper, practical and reasonable custom in the proper operation of such a water-gas set as is involved here."

It appears from the evidence that a burning out and cleaning out period of one day out of seven is not a proper, practical and reasonable custom in the proper operation of such a water-gas set as that possessed by the defendant under such a twenty-day test as was provided for in said contract of July 12th, 1909; that the burning out and cleaning out period of one day in seven is a custom peculiar to the plaintiff company, and is a custom used and adopted only in the operation of such apparatus as are kept in continuous operation throughout an entire period of twelve months.

It further appears from the evidence that the contract of July 12th, 1909, does not provide for any such shutting down period during the final twenty-day test of defendant's apparatus; and that such event was not contemplated even by the parties at the time said contract was entered into.

The evidence is not sufficient to support the finding in the respect mentioned. [813]

XLV.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"The average quantity of gas produced per 24 hours during the seventeen days on which the apparatus was actually operated was slightly in excess of two million cubic feet per day."

It appears from the evidence that if the total amount of gas produced by said apparatus of the defendant from March 10 to March 30, 1910, is divided by a factor of 17, that the result would be an average of over 2,000,000 cubic feet per day; but the evidence shows that such portions of the 14th, 15th and 16th days of March, 1910, as was taken by the defendant to clean out its generator is, in gas-making practice, considered as part of the operating period of said apparatus, and that under the contract of July 12th, 1909, the average capacity of said apparatus of the defendant as demonstrated during its final test from the 10th to the 30th of March, 1910, is obtained only by dividing the total production of the gas produced during said period by a factor of 20.

The evidence is insufficient to support the finding of the Court in the respects mentioned. [814]

XLVI.

The Court erred in making and filing the following portion of finding No. XVI as follows:

"A test of 20 or more consecutive days was never had of the said apparatus."

It appears from the evidence that a test of 20 consecutive days was had of said apparatus as in said contract of July 12th, 1909, provided; that on the

9th day of March, 1910, the defendant notified the plaintiff in writing that at 6 o'clock A. M. on March 10th, 1910, it would commence the final 20-day test of its said apparatus, as provided for in said contract of July 12th, 1909, and that at 6 o'clock A. M., March 10th, 1910, the defendant did commence the final test of said apparatus, and did prosecute the same for the next 20 consecutive days, to wit, until 6 o'clock A. M., March 30th, 1910, at which time the defendant, of its own accord, ceased to operate said apparatus, and announced that it had completed the test of the same.

The evidence further shows that during said test and at all times the plaintiff had fully performed each and every obligation and condition upon its part to be performed under said contract of July 12, 1909, and had during the said final test of said apparatus furnished and afforded the defendant all the operative conditions and character of fuel required to be furnished by it under said contract of July 12th, 1909.

The evidence is insufficient to support the finding in the respects mentioned. [815]

XLVII.

The Court erred in making and filing the following portion of finding No. XVI, as follows:

"A test of 20 or more consecutive days was never had of the said apparatus with fuel of the character and quality provided to be furnished by the plaintiff to the defendant in the said contract."

It appears from the evidence that a test of 20 consecutive days, as provided for in said contract of July 12th, 1909, was had of the said apparatus of the de-

fendant in its operation from March 10th to March 30th, 1910, and that during said test said apparatus was furnished by the plaintiff with the character and quality of fuel which the plaintiff was obliged to furnish the defendant under the contract of July 12th, 1909.

It further appears from the evidence that prior to the commencement of said test the defendant notified the plaintiff in writing that all of the fuel which the plaintiff then had on hand, and which it later furnished to the defendant during said test was satisfactory to the defendant; that all the fuel furnished to the defendant during said test was fuel of the kind and character which the parties contracted should be furnished under the contract of July 12th, 1909.

In assignments of errors heretofore set forth, plaintiff has set forth other particulars more in detail in which the aforesaid finding of the Court is not supported by the evidence. All of the said particulars set forth in aforesaid mentioned assignments are made a part hereof with the same force and effect as if set forth herein.

The evidence is insufficient to support the finding in the respect mentioned. [816]

XLVIII.

The Court erred in making and filing the following portion of finding No. XVI, as follows:

“Nor was the test of the said apparatus carried on from the 10th to the 30th of March as aforesaid, such a test as the contract provided for.”

It appears from the evidence that the test of the said apparatus carried on from the 10th to the 30th of March, 1910, was such a test as the contract of

July 12th, 1909, provided for; that during said test plaintiff at all times fully performed all conditions and obligations upon its part to be performed, and did during such test furnish and supply to the defendant all such operating conditions and fuel as in said contract provided; that the defendant did at the commencement of said test announce to the plaintiff in writing that the said test was a final test of said apparatus as in said contract of July 12th, 1909, provided.

The assignment of errors heretofore set forth, addressed to findings of the Court similar in substance to the finding herein, which point out more in detail particulars in which the aforesaid finding is unsupported by the evidence, and all statements of evidence contained in the aforesaid assignment of errors are made a part hereof with the same force and effect as if set forth herein.

The evidence is insufficient to support the finding in the respect mentioned. [817]

XLIX.

The Court erred in making and filing the following portion of finding No. XVI as follows:

“Nor was the same such a test as would properly or fairly indicate or determine the capacity or economy of operation of said apparatus for 20 or more consecutive days, or as a permanent operating apparatus or otherwise.”

It appears from the evidence that the said final test of said apparatus was such a test as would and did fairly indicate and determine the capacity and economy of operation of said apparatus for 20 or more consecutive days, and its maximum capacity as

a permanent operating apparatus. The evidence shows that all of the operative conditions, and all the fuel and material furnished and supplied by the plaintiff to the defendant during said final test of said apparatus was fuel and were operative conditions such as were called for under the contract of July 12th, 1909; that at the commencement of said test the said apparatus of the defendant was in a proper condition; and that during said test the said apparatus had produced more gas with better fuel economies than it had at any time theretofore during any operation thereof; that during said test the plaintiff fulfilled each and all the conditions upon its part to be fulfilled under the contract of July 12th, 1909.

The evidence is insufficient to support the finding in the respects mentioned. [818]

L.

The Court erred in making and filing that portion of finding No. XVII, as follows:

"That during said test defendant repeatedly protested against the character of the bricks furnished."

It appears from the evidence that prior to the commencement of said final test, the defendant notified the plaintiff in writing that the store of bricks which the plaintiff had on hand for use during said final test was satisfactory and would be acceptable to the defendant for use during said final test from the 10th to the 30th of March, 1910.

It further appears from the evidence that the defendant at no time protested against the character of the bricks furnished during said final test until at a time about the middle of the said test; that at said time the plaintiff did not have in its possession any

bricks of a character different from or better than those which it was supplying to the defendant at that time, and had theretofore supplied to it during said test, or at any other time.

The evidence is insufficient to support the finding in the respect mentioned. [819]

LI.

The Court erred in making and filing the finding that the plaintiff is not entitled to recover of the defendant the sum of \$28,323.45, or any part thereof.

It appears from the evidence that from March 10th to March 30th, 1910, the defendant made such a final test of its said apparatus as provided for in the contract of July 12th, 1909, and that during said test, and at all times, the plaintiff fully performed all the conditions and obligations on its part to be performed under said contract; that during said final test the said apparatus, without any fault on the part of the plaintiff, failed to produce for 20 consecutive days an average of at least 2,000,000 cubic feet of gas per 24 hours, and did, during said test, fail to produce gas with a consumption of not more than 35 pounds of lamp-black fuel, containing not more than 10 per cent of moisture, per thousand cubic feet of gas made; and that said apparatus during said final test failed to produce a good, commercial gas having an average candle-power of not less than twenty candles.

The evidence further shows that after the said test of said apparatus, the plaintiff demanded that the defendant pay to the plaintiff the sum of \$26,323.45, which the defendant has at all times refused to do; that plaintiff did at said time demand that the plain-

tiff remove its apparatus from the premises of said plaintiff, which the defendant at all times refused to do; that the reasonable cost of removing said apparatus was \$2,000, and that under and by virtue of the contract of July 12th, 1909, the plaintiff was entitled to recover from the defendant the said sum of \$28,323.45. [820]

LII. .

The Court erred in failing to find and decide that the plaintiff is entitled to judgment against the defendant in the sum of \$28,323.45.

It appears from the evidence that from March 10th to March 30th, 1910, the defendant made a final test of its said apparatus as provided for in the contract of July 12th, 1909; that during said test, and at all times, the plaintiff fully performed all the conditions and obligations on its part to be performed under said contract. The evidence shows that during said final test, the said apparatus, without any fault on the part of the plaintiff, failed to produce for twenty consecutive days an average of at least 2,000,000 cubic feet of gas per 24 hours; and did, during said test, fail to produce gas with a consumption of not more than 35 pounds of lamp-black fuel containing not more than 10 per cent of moisture per thousand cubic feet of gas made, and that said apparatus during said final test failed to produce a good, commercial gas having an average candle-power of not less than twenty candles.

The evidence further shows that after the said test of said apparatus, the plaintiff demanded that the defendant pay to the plaintiff the sum of \$26,323.45,

which the defendant has at all times refused to do; that plaintiff did at said time demand that the defendant remove its said apparatus from the premises of said plaintiff, which the defendant at all times has refused to do; and that the reasonable cost of removing said apparatus was \$2,000, and under and by virtue of the contract of July 12th, 1909, the plaintiff was entitled to recover from the defendant the said sum of \$28,323.45. [821]

LIII.

The Court erred in failing to find and decide that the plaintiff was entitled to recover from the defendant the sum of \$26,323.45.

It appears from the evidence that from March 10th to March 30th, 1910, the defendant made such a final test of its said apparatus as was provided for in the contract of July 12th, 1909, and that during said test, and at all times, the plaintiff fully performed all the conditions and obligations on its part to be performed under said contract; that during said final test the said apparatus, without any fault on the part of the plaintiff, failed to produce for 20 consecutive days an average of at least 2,000,000 cubic feet of gas per 24 hours; and did, during said test, fail to produce gas with a consumption of not more than 35 pounds of lamp-black fuel containing not more than 10 per cent of moisture, per thousand cubic feet of gas made; and that said apparatus, during said final test, failed to produce a good, commercial gas having an average candle-power of not less than 20 candles.

The evidence further shows that after the said test of the said apparatus, the plaintiff demanded that the

defendant pay to the plaintiff the sum of \$26,323.45, which the defendant has at all times refused to do; and that under and by virtue of the said contract of July 12th, 1909, the plaintiff was entitled to recover from the defendant the said sum of \$26,323.45. [822]

LIV.

The Court erred in failing to enter judgment against the said defendant and in favor of the plaintiff for the sum of \$28,323.45.

It appears from the evidence that from March 10th to March 30th, 1910, the defendant made such a final test of its said apparatus, as provided for in the contract of July 12th, 1909; that during said test, and at all times, the plaintiff fully performed all the conditions and obligations on its part to be performed under said contract; that during said final test the said apparatus, without any fault on the part of the plaintiff, failed to produce for 20 consecutive days an average of at least 2,000,000 cubic feet of gas per 24 hours, and did, during said test, fail to produce gas with a consumption of not more than 35 pounds of lamp-black fuel, containing not more than 10 per cent of moisture, per thousand cubic feet of gas made, and that said apparatus during said final test failed to produce a good, commercial gas having an average candle-power of not less than twenty candles.

The evidence further shows that after the said test of said apparatus, the plaintiff demanded that the defendant pay to the plaintiff the sum of \$26,323.45, which the defendant refused and has at all times so refused to do; that the plaintiff did at said time demand that the defendant remove its apparatus from

the premises of said plaintiff, which the defendant at all times refused to do; and that the reasonable cost of removing said apparatus was \$2,000, and that under and by virtue of the contract of July 12th, 1909, the plaintiff was entitled to recover the sum of \$28,-323.45 from the said defendant. [823]

LV.

The Court erred in failing to enter judgment against the said defendant and in favor of the said plaintiff in the sum of \$26,323.45.

It appears from the evidence that from March 10th to March 30th 1910, the defendant made such a final test of its said apparatus as provided for in the contract of July 12th, 1909, and that during said test, and at all times herein, the plaintiff fully performed all the conditions and obligations on its part to be performed under said contract; that during said final test the said apparatus, without any fault on the part of the plaintiff, failed to produce for 20 consecutive days an average of at least 2,000,000 cubic feet of gas per 24 hours, and did during said test fail to produce gas with a consumption of not more than 35 pounds of lamp-black fuel containing not more than 10 per cent of moisture per thousand cubic feet of gas made; and that said apparatus during said final test failed to produce a good, commercial gas having an average candle-power of not less than twenty candles.

The evidence further shows that after the said test of said apparatus, the plaintiff demanded that the defendant pay to the plaintiff the sum of \$26,323.45, which the defendant refused at all times so to do, and that under and by virtue of the contract of July 12th.

1909, the plaintiff was entitled to recover from the defendant the said sum of \$26,323.45. [824]

LVI.

The Court erred in failing to find that the lamp-black fuel furnished by the plaintiff to the defendant, during said final test, was fuel in accordance with the contract of July 12th, 1909.

It appears from the evidence, as set forth in assignment of error No. XXXII, that all of the lamp-black fuel which was furnished to the defendant by the plaintiff, during said final test from the 10th to the 30th of March, 1910, for use in its said apparatus, was fuel in accordance with the contract of July 12th, 1909.

The statements as to what the evidence showed in this regard, contained in said assignment of error No. XXXII, are made a part hereof with the same force and effect as if set forth in detail herein. [825]

LVII.

The Court erred in failing to find that the operation of said water-gas apparatus by the defendant during the period from March 10th to March 30th, 1910, was a final test of said apparatus as contemplated and provided for in said contract of July 12th, 1909.

It appears from the evidence that the operation of said water-gas apparatus by the defendant during the period from March 10th to March 30th, 1910, was a final test of said apparatus as contemplated and provided for in said contract of July 12th, 1909; that prior to the commencement of said final test, the defendant notified the plaintiff in writing that on the

10th day of March, 1910, it would commence the final test of its apparatus; that on the said 10th day of March, 1910, the defendant did commence said final test, and did operate said apparatus continuously for the next twenty days; and that during said test the plaintiff, at all times, furnished the defendant with operating conditions and fuel in accordance with the contract of July 12th, 1909, and in all other respects fully complied with the conditions and obligations of the said contract of July 12th, 1909. [826]

LVIII.

The Court erred in failing to find that the defendant during said final test of said apparatus from March 10th to March 30th, 1910, inclusive, failed to bring its said water-gas apparatus to an established capacity, as provided in said contract of July 12th, 1909, of at least 2,000,000 cubic feet of gas per 24 hours.

The evidence shows that during the final test of said apparatus from March 10th to March 30th, 1910, the defendant failed to bring its said apparatus to an established capacity, as provided in said contract of July 12th, 1909, of at least 2,000,000 cubic feet of gas per 24 hours; and that said failure was not due to any fault of the plaintiff; that the operation of said apparatus during said period was such a final test of said apparatus as in said contract of July 12th, 1909 provided; and that said plaintiff at all times fully performed all conditions upon its part to be performed under said contract. [827]

LIX.

The Court erred in failing to find that during said

period, to wit, from March 10th to March 30th, 1910, said defendant failed to bring said apparatus to an established capacity of producing gas with a consumption of not more than 35 pounds of lamp-black fuel per thousand cubic feet of gas made.

The evidence shows that from March 10th to March 30th, 1910, the said apparatus was operated under and according to the terms of the contract of July 12th, 1909, in a final test of said apparatus; that during said test the plaintiff at all times performed all the conditions and obligations upon its part to be performed under said contract; and that said apparatus, during said final test, and without any fault on the part of the plaintiff, failed to reach an established capacity, as in said contract provided, in producing gas with a consumption of 39 pounds of lamp-black fuel per thousand cubic feet of gas made.

[828]

LX.

The Court erred in failing to find that during said final test of said apparatus from March 10th to March 30th, 1910, inclusive, the defendant failed to bring said apparatus to an established capacity of producing during said period gas of an average candle-power of at least 20 candles.

It appears from the evidence that from March 10th to March 30th, 1910, inclusive, the defendant operated said apparatus in a final test, as in said contract of July 12th, 1909 provided; that during said test the plaintiff at all times performed all conditions and obligations upon its part under said contract; that during said test the defendant, without any fault on the

part of the plaintiff, failed to bring said apparatus to a capacity of producing, during said period, gas of an average candle-power of at least 20 candles.

[829]

LXI.

The Court erred in failing to find that the plaintiff had at all times performed all the conditions and obligations imposed upon it by and under the said contract of July 12th, 1909.

It appears from the evidence that the plaintiff at all times performed all the conditions and obligations imposed upon it by and under said contract of July 12th, 1909. It further appears from the evidence, and was admitted by the defendant, that the plaintiff, performed all the conditions upon its part to be performed under said contract, with the sole exception that the lamp-black fuel furnished by the plaintiff to the defendant during the final test of defendant's said apparatus did not possess the tensile strength and solidity required of it under the contract of July 12th, 1909.

As to the said lamp-black fuel, however, the evidence shows that the said fuel was fuel of the same character, and even better than the lamp-black fuel which had been furnished to the defendant by the plaintiff's assignor for two years prior to July 12th, 1909; that it was lamp-black fuel possessing all of the qualities which the parties contemplated that it should possess at the time the said contract of July 12th, 1909, was entered into, and that said lamp-black fuel had as great a tensile strength and solidity as [830] was possible for the same to possess.

The evidence further shows that in manufacturing the lamp-black fuel furnished to the defendant during the final test of its said apparatus the plaintiff used the most modern processes, and that it was the only concern in the United States producing lamp-black fuel of the character herein referred to; that prior to the final test of said apparatus, the defendant notified the plaintiff that the fuel which the plaintiff later supplied to the defendant was satisfactory to the defendant in every respect for the final test of said apparatus. The evidence shows that the defendant was aware at all times of the fuel which the plaintiff intended to furnish to it during said final test, and had examined and tested the same and reported that it was satisfactory; that the defendant at no time complained of the tensile strength of the fuel furnished to it during said final test, except from about the 20th of March, 1910, until the finish of said test.

The evidence further shows that during the said final test the plaintiff furnished to the defendant the best possible fuel in its possession, and the only fuel which was possible for plaintiff to obtain or manufacture; and that all of the fuel furnished to the defendant during said final test was fuel having the tensile strength and solidity, and every other quality and characteristic provided for under the contract of July 12th, 1909.

WHEREFORE, said Los Angeles Gas and Electric Corporation, plaintiff and appellant, prays that the judgment of the Circuit [831] Court of the United States for the Southern District of Cali-

fornia, Southern Division, be reversed, and that the said court be directed to grant a new trial in said cause.

WM. A. CHENEY.

HERBERT J. GOUDGE,

LEROY M. EDWARDS,

Attorneys for the Los Angeles Gas and Electric Corporation, Plaintiff in Error.

[Endorsed]: C. C. No. 1558. U. S. District Court, Southern District of California Southern Division. Los Angeles Gas and Electric Corporation, a Corporation, vs. The Western Gas Construction Company, a Corporation. Assignment of Errors. Filed Mar. 25, 1912. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. [832]

*In the District Court of the United States, in and for
the Southern District of California, Southern
Division.*

LOS ANGELES GAS AND ELECTRIC COR-
PORATION, a Corporation,

Plaintiff,

vs.

THE WESTERN GAS CONSTRUCTION COM-
PANY, a Corporation,

Defendant.

**Order Allowing Writ of Error and Fixing
Supersedeas Bond.**

The above-named plaintiff, Los Angeles Gas and Electric Corporation, a corporation, having this day filed its petition for a writ of error from the judg-

ment made and entered herein, to have the same reviewed by the United States Circuit Court of Appeals for the Ninth Judicial Circuit, together with an assignment of errors within due time, and also praying that an order be made fixing the amount of security which said plaintiff should give and furnish upon said writ of error, and that upon the giving of said security all further proceedings of this court be suspended and stayed until the determination of said writ of error by the said United States Circuit Court of Appeals for the Ninth Circuit:

Now, therefore, it is ordered that a writ of error be and is hereby allowed, to have reviewed in the United States Circuit Court of Appeals for the Ninth Circuit, the judgment heretofore entered herein, and that the amount of bond upon said writ of error be and hereby is fixed at \$250, and upon the filing of said bond according to law, and the approval thereof by the Court, all further proceedings in the court be suspended and stayed until the determination of said [833] writ of error by the said United States Circuit Court of Appeals, and filing and approval of said bond to act as a supersedeas in the premises.

Dated March 25, 1912.

OLIN WELLBORN,
Judge.

[Endorsed]: C. C. No. 1558. Dept. In the District Court of the United States in and for the Southern District of California. Los Angeles Gas and Electric Corporation, a Corporation, Plaintiff, vs. The Western Gas Construction Company, a Corporation, Defendant. Order Allowing Writ of Error

and Fixing Supersedeas Bond. Filed Mar. 25, 1912.
Wm. M. Van Dyke, Clerk. By Chas. N. Williams,
Deputy Clerk. Wm. A. Cheney, Herbert J. Goudge,
LeRoy M. Edwards, 645 South Hill Street, Room 31,
Los Angeles, Cal., Attorneys for Plaintiff. [834]

*In the United States Circuit Court of Appeals, Ninth
Judicial Circuit.*

LOS ANGELES GAS AND ELECTRIC COR-
PORATION, a Corporation,

Plaintiff,

vs.

THE WESTERN GAS CONSTRUCTION COM-
PANY, a Corporation,

Defendant.

Bond on Writ of Error.

KNOW ALL MEN BY THESE PRESENTS:

That we, Los Angeles Gas and Electric Corporation, a corporation, as principal, and the United States Fidelity and Guaranty Company, a corporation, organized and existing under and by virtue of the laws of the State of Maryland, and duly licensed and authorized by the State of California to transact business as surety within the said State of California, as surety, are held and firmly bound unto The Western Gas Construction Company, a corporation, defendant above named, in the sum of \$250 to be paid to the said Western Gas Construction Company, for which payment well and truly to be made we bind ourselves, and each of us, jointly and severally, and our and

each of our successors, representatives or assigns, firmly by these presents.

Sealed with our seals and dated the 25th day of March, 1912.

The condition of the above obligation is such that whereas the above-named plaintiff, Los Angeles Gas and Electric Corporation, a corporation, has sued out a writ of error to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the judgment in the above-entitled cause by the Circuit Court of the United States for the Ninth Circuit, Southern District of California, Southern Division, therein rendered on the 6th day of November, 1911.

Now, therefore, the condition of this obligation is such that if the above-named Los Angeles Gas and Electric Corporation, [835] a corporation, shall prosecute said writ to effect, and answer all costs and damages if it shall fail to make good its appeal, then this obligation to be void; otherwise to remain in full force and effect.

LOS ANGELES GAS AND ELECTRIC
CORPORATION.

By R. M. ADAMS, Secy.
THE UNITED STATES FIDELITY AND
GUARANTY COMPANY.

By FRANK M. KELSEY,
Its Attorney in Fact.

Bond approved this 25th day of March, 1912.

OLIN WELLBORN,
Judge.

State of California,
County of Los Angeles,—ss.

On this 25th day of March, in the year one thousand nine hundred and twelve, before me, Hallie D. Winebrenner, a notary public in and for said county and State, residing therein, duly commissioned and sworn, personally appeared Frank M. Kelsey, known to me to be the duly authorized attorney in fact of The United States Fidelity and Guaranty Company, and the same person whose name is subscribed to the within instrument as the attorney in fact of said company, and the said Frank M. Kelsey duly acknowledged to me that he subscribed the name of The United States Fidelity and Guaranty Company thereto as principal and his own name as attorney in fact.

In witness whereof, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

[Seal] HALLIE D. WINEBRENNER,
Notary Public in and for Los Angeles County, State
of California. [836]

[Endorsed]: C. C. No. 1558. In the United States Circuit Court of Appeals, Ninth Judicial Circuit. Los Angeles Gas and Electric Corp., a Corp., Plaintiff, v. The Western Gas Construction Company, a Corp., Def. Bond on Writ of Error. Filed Mar. 25, 1912. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. [837]

*In the District Court of the United States, Southern
District of California, Southern Division.*

LOS ANGELES GAS AND ELECTRIC CORPO-
RATION, a Corporation,

Plaintiff,

vs.

THE WESTERN GAS CONSTRUCTION COM-
PANY, a Corporation,

Defendant.

**Stipulation and Order for Removal of Exhibits and
Transmission of Same to Circuit Court of
Appeals.**

The parties to the above-entitled action hereby stipulate and agree that the Clerk of the above-entitled court may remove from the above-entitled court and transmit to the Circuit Court of Appeals all of the following exhibits filed in the above cause, to wit: Exhibits No. Dep. Ex's "L." and "M."

WM. A. CHENEY,
HERBERT J. GOUDGE,
LEROY M. EDWARDS,
Attorneys for Pltf.
OSCAR A. TRIPPET,
WARD CHAPMAN,
Attorneys for Def.

So ordered.

OLIN WELLBORN,
Judge of the District Court.

Dated March 25th, 1912.

[Endorsed]: C. C. No. 1558. Dept. In the District Court of the United States, Southern District of California, Southern Division. Los Angeles Gas and Electric Corporation, Plaintiff, vs. The Western Gas Construction Company, Defendant. Stipulation and Order to Remove Exhibits. Filed Mar. 25, 1912. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. LeRoy M. Edwards, 814 H. W. Hellman Building, Phone F6204, Los Angeles, Cal., Attorney for Pltf. [838]

[Certificate of Clerk U. S. District Court to
Transcript of Record.]

In the District Court of the United States of America, in and for the Southern District of California, Southern Division.

No. 1558.

LOS ANGELES GAS AND ELECTRIC CORPORATION, a Corporation,

Plaintiff,

vs.

WESTERN GAS CONSTRUCTION COMPANY, a Corporation,

Defendant.

I, Wm. M. Van Dyke, Clerk of the District Court of the United States of America, in and for the Southern District of California, do hereby certify the foregoing eight hundred thirty-eight pages, numbered from 1 to 838, inclusive, and comprised in two volumes, to be a full, true and correct copy of the

pleadings and of all papers and proceedings upon which the judgment was made and entered in said cause, and also of the Judgment, Bill of Exceptions, Petition for Writ of Error, Assignment of Errors, Order Allowing Writ of Error, Bond on Writ of Error and stipulation and order for transmission of original exhibits, in the above and therein entitled cause, and that the same together constitute the record in said cause as specified in the Praeceipe filed in my office, on behalf of the plaintiff, by its attorneys of record.

I do further certify that the cost of the foregoing record is \$452.40, the amount whereof has been paid me by the Los Angeles Gas and Electric Corporation, the plaintiff in said cause.

In testimony whereof, I have hereunto set my hand and affixed the seal of the District Court of the United States of America, in and for the Southern District of California, Southern Division, this 17th day of July, in the year of our Lord, one thousand nine hundred and twelve, and of our Independence the one hundred and thirty-seventh.

[Seal]

WM. M. VAN DYKE,

Clerk of the District Court of the United States, in
and for the Southern District of California.

[839]

[Endorsed]: No. 2159. United States Circuit Court of Appeals for the Ninth Circuit. Los Angeles Gas and Electric Corporation, a Corporation, Plaintiff in Error, vs. The Western Gas Construction Company, a Corporation, Defendant in Error.

Transcript of Record. Upon Writ of Error to the United States District Court of the Southern District of California, Southern Division.

Filed July 19, 1912.

F. D. MONCKTON,
Clerk of the United States Circuit Court of Appeals
for the Ninth Circuit.

[Order Under Rule 16 Enlarging Time to September 1, 1912, to File Record Thereof, and to Docket Case.]

In the United States Circuit Court of Appeals, Ninth Judicial Circuit.

LOS ANGELES GAS AND ELECTRIC CORPORATION, a Corporation,

Plaintiff in Error,
vs.

THE WESTERN GAS CONSTRUCTION COMPANY, a Corporation,

Defendant in Error.

Good cause appearing therefor, it is hereby ordered that the time heretofore allowed said plaintiff in error to docket said cause and file the record thereof with the Clerk of the United States Circuit Court of Appeals for the Ninth Circuit, be and the same is hereby enlarged and extended to and including the 1st day of September, 1912.

Dated at Los Angeles, April 18th, 1912.

OLIN WELLBORN,
United States District Judge, for the Southern District of California.

[Endorsed]: No. 2159. United States Circuit Court of Appeals for the Ninth Circuit. Order Under Rule 16 Enlarging Time to September 1, 1912, to File Record Thereof and to Docket Case. Filed Apr. 19, 1912. F. D. Monckton, Clerk. Refiled Jul. 19, 1912. F. D. Monckton, Clerk.